

Chapter 4

Built Environment: Affected Environment and Project Impacts

4.0 Introduction

For the purposes of this Draft Environmental Impact Statement (Draft EIS), environmental resource areas have been divided into three categories: the Built Environment, the Natural Environment, and Operations (Chapters 4, 5, and 6, respectively). The purpose of this chapter is to discuss the built environment resource areas assessed for the Millennium Bulk Terminals—Longview project (proposed export terminal).

Information contained in this Draft EIS was drawn from technical reports located in Volume III of this Draft EIS and incorporated by reference. The technical reports include more detailed discussion on methods used for analysis, the affected environment, and potential impacts of the proposed export terminal.

4.0.1 Built Environment Resource Areas

Chapter 4, *Built Environment: Affected Environment and Project Impacts*, evaluates the communities, cultural past, and use of land relevant to the proposed export terminal. The resource areas in this analysis include land use, social and community resources, aesthetics, cultural resources, tribal treaty rights and trust responsibilities, hazardous materials, and energy (Table 4.0-1). Additional detailed information about these resources can also be found in the corresponding technical reports in Volume III of this Draft EIS.

Chapter 8, *Minimization and Mitigation*, presents measures to mitigate potential impacts of the proposed export terminal identified in this chapter.

Table 4.0-1. Built Environment Resource Areas and Corresponding Draft EIS Sections

Chapter	Section Number	Environmental Resource Area
Chapter 4, Built Environment: Affected Environment and Project Impacts	4.1	Land Use
	4.2	Social and Community Resources
	4.3	Aesthetics
	4.4	Cultural Resources
	4.5	Tribal Treaty Rights and Trust Responsibilities
	4.6	Hazardous Materials
	4.7	Energy

4.0.2 Alternatives and Timeframe for Analysis

This chapter analyzes impacts that would likely occur as a result of construction and operation of the proposed export terminal. The analysis assumes construction beginning in 2018 and full operations¹ occurring by 2028. Throughout this chapter, the location of the proposed export terminal for both the On-Site Alternative and Off-Site Alternative is referred to as the *project area*.

This chapter also analyzes impacts that could occur under the No-Action Alternative. Chapter 3, *Alternatives*, of this Draft EIS provides a description of the On-Site Alternative, Off-Site Alternative, and No-Action Alternative.

4.0.3 Study Areas and Type of Impacts Analyzed

As discussed in Chapter 1, *Introduction*, the NEPA scope of analysis includes the activities requiring a Department of the Army permit from the Corps, plus those activities outside the permit area over which the Corps has sufficient control and responsibility. Therefore, the Corps' scope of analysis for this Draft EIS includes the project area, the area that would be dredged, any dredged material disposal sites, any off-site area that might be used for compensatory mitigation, and any other area in or adjacent to the Columbia River that would be affected by, and integral to, the proposed export terminal.

Within the overall NEPA scope of analysis, study areas have been defined for each resource. The size and location of each study area depends, in part, on physical and/or biological characteristics of the resource, logistics, nature and extent of potential impacts, and how the resource is regulated. Separate study areas are normally identified for direct impacts and indirect impacts. Table 4.0-2 explains the general differences between direct and indirect impact study areas.

Table 4.0-2. Types of Impacts and Impact Examples

Type of Impact	Description	Example of Impacts
Direct	An impact resulting from construction or operation of the proposed export terminal at the On-Site Alternative or Off-Site Alternative location. Direct impacts are caused by the action and occur at the same time and place (40 CFR 1508.8).	<ul style="list-style-type: none"> • Construction: Temporary impacts within the project area that are resolved or mitigated by the end of construction, or permanent changes to the project area due to construction of the proposed export terminal. • Operation: Impacts occurring in the project area resulting from rail unloading, coal storage, machinery operations, equipment, vessel loading, etc.

¹ Full operation means the proposed export terminal would have a maximum throughput of up to 44 million metric tons of coal per year, as described in Chapter 3, *Alternatives*.

Type of Impact	Description	Example of Impacts
Indirect	An impact resulting from construction or operation of the proposed export terminal that occurs outside the project area or later in time. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable (40 CFR 1508.8).	<ul style="list-style-type: none"> • Construction: Impacts that occur outside the project area, such as vehicle and rail traffic that support construction activities. • Operation: Impacts from activities that occur outside the project area, such as rail, vehicle and vessel traffic that support operational activities, or that occur within the project area later in time.

Table 4.0-3 provides a summary of the direct impacts and indirect impacts study areas for built environment resources. These study areas were developed based on the Corps Memorandum for Record (MFR) entitled *Scope of Analysis and Extent of Impact Evaluation for National Environmental Policy Act Environmental Impact Statement* (2014). The study areas contained in this Draft EIS typically conform with the MFR. In some cases, study areas were adjusted to reflect the characteristics and specific elements for each resource area.

Table 4.0-3. Direct Impact Study Areas and Indirect Impact Study Areas by Resource

Resource	Direct Impacts Study Area	Indirect Impacts Study Area
Section 4.1, Land Use	<ul style="list-style-type: none"> • Land Use: Project area for the On-Site Alternative and Off-Site Alternative, and the area within 500 feet of the project areas • Parks and Recreational Facilities: The project areas and the area within 0.5 mile of the project areas, and the Willow Grove and Rainier Riverfront Park boat launches • Agricultural Land: Project area for the On-Site Alternative and Off-Site Alternative 	<ul style="list-style-type: none"> • Land Use: Longview-Kelso urban area and nearby unincorporated areas of Cowlitz County • Parks and Recreational Facilities: Same as direct impacts study area • Agricultural Land: Project areas and the area within 500 feet of the project areas
Section 4.2, Social and Community Resources	<ul style="list-style-type: none"> • Social and Community Cohesion and Public Services: Project area for the On-Site Alternative and Off-Site Alternative, and the area within 0.5 mile of the project areas • Local Economy: Cities of Kelso and Longview • Utilities: The project areas and the area within 0.5 mile of the project areas • Environmental Justice: Project areas and area within approximately 1 mile of the project area 	<ul style="list-style-type: none"> • Social and Community Cohesion and Public Services: The project areas and the area within 0.5 mile of the Reynolds Lead and BNSF Spur rail corridor • Local Economy: Cowlitz County • Utilities: The project areas and the area within 0.5 mile of the project areas • Environmental Justice: The project areas and the area within 0.5 mile of the Reynolds Lead and BNSF Spur rail corridor
Section 4.3, Aesthetics	The area within a 3-mile radius of the project areas	The area within a 3-mile radius of the project areas

Resource	Direct Impacts Study Area	Indirect Impacts Study Area
Section 4.4, Cultural Resources	Project area for the On-Site Alternative and Off-Site Alternative, areas of Columbia River affected by overwater structures and dredging, surrounding areas affected by construction, and vantage points along U.S. Route 30 in Oregon	Same as the direct impacts study area
Section 4.5, Tribal Treaty Rights and Trust Responsibilities	The compilation of study areas defined for the areas of concern (i.e., fish, vegetation, wildlife, and vessel transportation)	Same as direct impacts (direct and indirect impacts were not differentiated for the analysis)
Section 4.6, Hazardous Materials	Project area for the On-Site Alternative and Off-Site Alternative	Project areas and the area within 1 mile of the project areas
Section 4.7, Energy	Project area for the On-Site Alternative and Off-Site Alternative	Project areas and the area within 0.25 mile of the project areas

4.1 Land Use

Land use refers to how land is developed for various purposes, including residential, commercial, parks and recreation, agricultural, and industrial uses. It also refers to the preservation or protection of land for natural uses. Development projects, such as the proposed project, must be compatible with surrounding land uses and comply with all state and local regulations and policies governing land use.

This section describes land use and zoning in the study areas, and the consistency of the On-Site Alternative and Off-Site Alternative with land use plans and public policies. It then describes potential impacts on land use from construction and operation of the proposed export terminal.

4.1.1 Regulatory Setting

Laws and regulations relevant to land use are summarized in Table 4.1-1.

Table 4.1-1. Regulations, Statutes, and Guidelines for Land Use

Regulation, Statute, Guideline	Description
State	
Washington State Growth Management Act (WAC 365-196, RCW 36.70A)	Requires state and local governments to manage Washington's growth by identifying and protecting critical areas and natural resource lands, designating urban growth areas, and preparing comprehensive plans and implementing them through capital investments and development regulations. Cowlitz County is required to designate and protect critical areas under the GMA, but is otherwise not required to fully plan under GMA.
Washington State Shoreline Management Act (WAC 173.27 <i>et seq.</i> , RCW 90.58)	Governs the use and development of "shorelines of the state." Requires local jurisdictions with "shorelines of the state" to develop and adopt a shoreline master program to carry out the policies of the SMA.
Washington State Harbor Improvement Plans (RCW 53.20)	Requires port commissions to develop and adopt a comprehensive scheme of harbor improvements and to make harbor improvements substantially in accordance with the adopted plan.
State Water Pollution Control Law (RCW 90.48)	Provides Ecology with the jurisdiction to control and prevent the pollution of streams, lakes, rivers, ponds, inland water, salt waters, watercourses, and other surface and groundwater in the state.
Local	
Cowlitz County Shorelines Management Regulations (CCC 19.20)	Adopted in 1977 in accordance with requirements of the SMA and Cowlitz County shorelines management regulations. Defines goals, policies, and objectives for development within shoreline areas of Cowlitz County. A draft update is currently in public review; adoption is expected in fall 2016.

Regulation, Statute, Guideline	Description
Cowlitz County Critical Areas Regulations (CCC 19.15)	Designates critical areas within Cowlitz County and adopts development regulations to preserve them, in accordance with the requirements of GMA.
Cowlitz County Land Use Ordinance (CCC 18.10)	Establishes official land use controls (including zoning regulations) for unincorporated areas of Cowlitz County. The zoning regulations are the principal tool for implementing the goals and policies of the Cowlitz County Comprehensive Plan.
Cowlitz County Comprehensive Plan (Cowlitz County 1976)	Adopted in 1976 and amended in 1981 to manage Cowlitz County growth. A draft update is currently in public review and is subject to change. Adoption of the updated comprehensive plan is expected in late 2016.
City of Longview Comprehensive Plan	Comprehensive plan adopted in 2006 to manage the City of Longview's growth. This comprehensive plan applies only to the Off-Site Alternative.
Port of Longview Comprehensive Scheme of Harbor Improvements	Describes the Port's existing facilities and defines plans for future investment, operation, and development of Port properties. Applicable in portions of the study areas only; does not apply to the project area. This plan applies only to the Off-Site Alternative.
Port of Longview Port Master Plan Report	Provides guidance for the future development of Port properties. This plan applies only to the Off-Site Alternative.
City of Longview Shoreline Master Program	Update to City of Longview Shoreline Master Program; approved by Ecology on July 27, 2015, and became effective August 10, 2015 (Washington State Department of Ecology 2015). This regulation applies only to the Off-Site Alternative.
City of Longview Zoning Ordinance (LMC 19)	Establishes zoning regulations for the City of Longview. This regulation applies only to the Off-Site Alternative.
City of Longview Critical Areas Regulations (LMC 17.10 and 17.12)	Provides protection for designated critical areas within the City of Longview. This regulation applies only to the Off-Site Alternative.
Notes: WAC = Washington Administrative Code; RCW = Revised Code of Washington; GMA = Growth Management Act; SMA = Shoreline Management Act; Ecology = Washington State Department of Ecology; CCC = Cowlitz County Code; LMC = Longview Municipal Code	

4.1.2 Study Area

The land use analysis encompasses three built environment elements: land use, parks and recreation facilities, and agricultural land. Each of these elements has its own study area based on the Corps' Memorandum for Record, dated February 14, 2014. These study areas were adjusted to reflect the specific community elements near the project areas. The following identifies the study areas used for this analysis, which are also depicted in Figure 4.1-1.

4.1.2.1 Land Use

For direct impacts, the study area for land use includes all areas within 500 feet of the project area, including the Columbia River. For indirect impacts, the study area is the project area and the surrounding Longview-Kelso urban area and nearby unincorporated areas of Cowlitz County.¹

4.1.2.2 Parks and Recreation Facilities

For direct and indirect impacts, the study area for parks and recreation facilities is the project area and the area within 0.5 mile of the project area. The study area also includes the nearby Willow Grove boat launch in Washington and the Rainier Riverfront Park boat launch in Oregon. These boat launches are more than 0.5 mile from the project area but provide public boating access to the Columbia River near the project area.

4.1.2.3 Agricultural Land

For direct impacts, the study area for agricultural land is the project area. For indirect impacts, the study area is the project area and the area within 500 feet of the project area.

4.1.3 Methods

This section discusses the information sources and impact analysis methods used in this analysis.

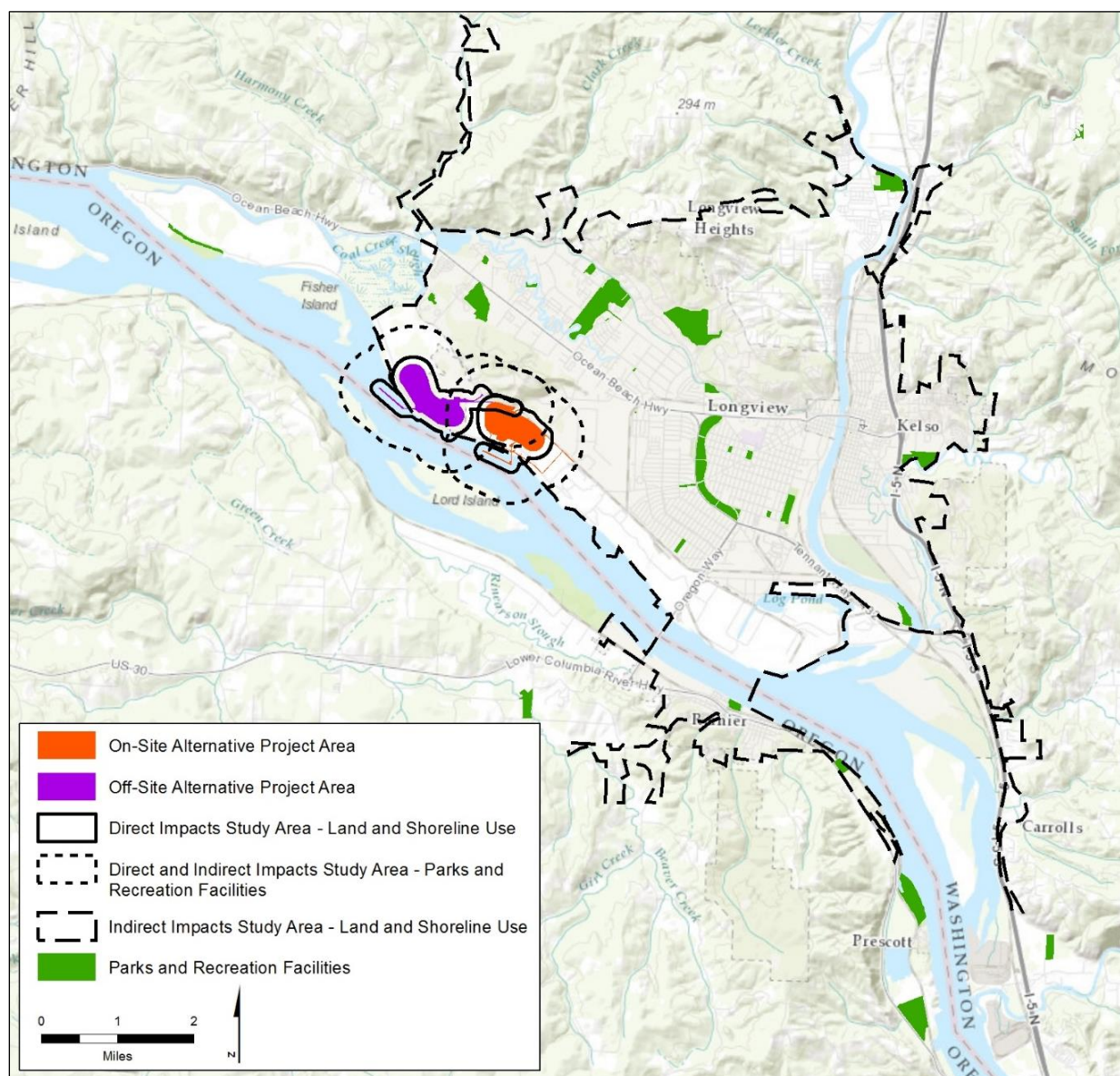
4.1.3.1 Information Sources

The following sources of information were used to identify potential impacts of the proposed export terminal and No-Action Alternative on land use in the study areas.

- *Cowlitz County Comprehensive Plan* (1976) and *City of Longview Comprehensive Plan* (2006)
- *Shorelines Management Master Program* (Cowlitz County 1977)
- Cowlitz County Code (CCC), including the Land Use Ordinance (Chapter 18.10), Environmental Policy (Chapter 19.11), Critical Areas Protection Ordinance (Chapter 19.15), and Shoreline Management (Chapter 19.20), and Longview Municipal Code (LMC)
- Cowlitz County NetMaps and geographic information system (GIS) data
- Field surveys conducted September 15 and October 29, 2014

The *NEPA Land Use Technical Report* (ICF International 2016) includes a detailed list of sources used in this analysis.

¹ This broader land use study area is the Longview-Kelso urban area as defined in the 2010 U.S. Census and adjusted to include the unincorporated areas of Cowlitz County adjacent to the project area, which are not part of the Census-defined urban area.

Figure 4.1-1. Land Use Study Areas

4.1.3.2 Impact Analysis

The impact analysis assesses whether the changes to land use in the project area would be compatible with surrounding land uses and with applicable land use plans and policies, zoning ordinances, and shoreline regulations. In general, the assessment of the compatibility of land use is based on the types of uses, their intensities, and their proximity to one another.

4.1.4 Affected Environment

This section describes the existing environment in the study areas related to land use potentially affected by construction and operation of the proposed export terminal under the On-Site Alternative, Off-Site Alternative, and No-Action Alternative.

4.1.4.1 On-Site Alternative

Land Use Plans and Public Policies

Land use in the study areas is guided by a variety of land use plans and public policies, which include comprehensive plans, shoreline master programs (SMPs), transportation plans, critical area regulations, and other plans. The applicable land use plans and public policies are discussed in detail in the *NEPA Land Use Technical Report*. The *Cowlitz County Comprehensive Plan* (Comprehensive Plan) (Cowlitz County 1976) and *Shorelines Management Master Program for Cowlitz County, Washington* (SMP) (Cowlitz County 1977) are summarized below.

Cowlitz County Comprehensive Plan

The Comprehensive Plan designates the project area as Heavy Industrial (Cowlitz County 1976). The plan states the purpose of the industrial classification is to “assure the presence of adequate amounts of land for industrial growth in Cowlitz County.” Appropriate uses in the Heavy Industrial designation include lumber and plywood mills, metal manufacturing, sand and gravel operations, foundry or iron works, quarries, agriculture, nonresidential commercial, and forest management and processing (Cowlitz County 1976). The *NEPA Land Use Technical Report* includes the applicable Comprehensive Plan map for the project area. The technical report also summarizes the eight goals in the Comprehensive Plan relating to the Heavy Industrial designation. Cowlitz County is currently updating its comprehensive plan; this update is also discussed in the technical report.

Cowlitz County Shoreline Management Master Program

The Shoreline Management Act (SMA) applies to all counties and cities with “shorelines of the state,” as defined in RCW 90.58.030. The County’s current SMP, approved in 1977, designates the shoreline environment at the project area as urban, making it suitable for intensive recreation, residential, industrial, and commercial development (Cowlitz County 1977). The objective of the urban designation is to identify those defined areas currently in and potentially capable of such use to satisfy the socioeconomic needs of the present and future populations of Cowlitz County. A discussion of the County’s SMP, including its use regulations, planning goals, and current update process, is provided in the *NEPA Land Use Technical Report*.

Land Use

The following section presents the characteristics of the existing environment related to land use by study area.

Direct Impacts Study Area

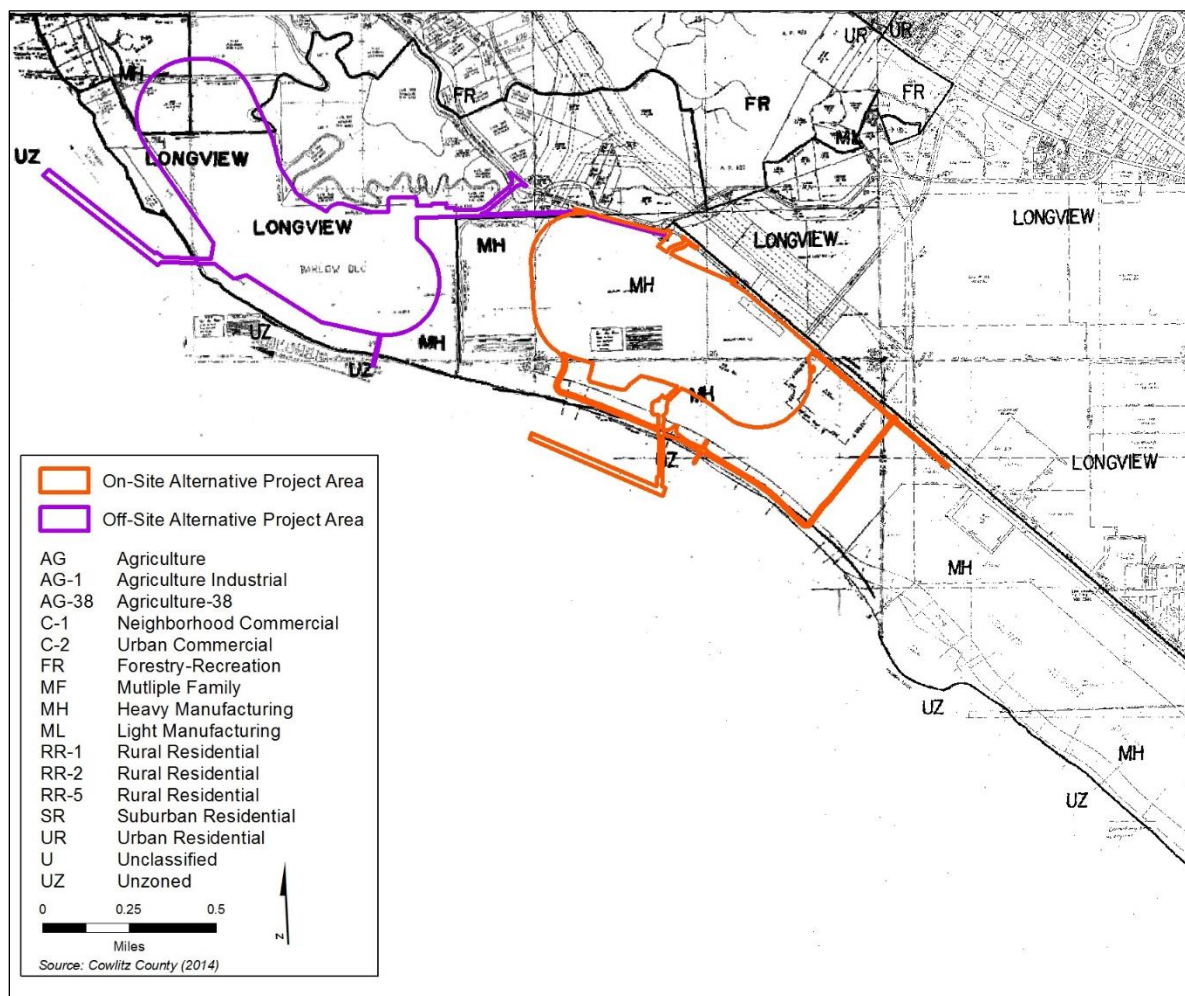
The direct impacts study area includes portions of unincorporated Cowlitz County and the City of Longview. Unincorporated areas of Cowlitz County, which includes the project area, are subject to the CCC. County zoning regulations are established in the Land Use Ordinance (CCC 18.10). The zoning regulations establish permitted uses, various building and lot dimension standards, and other requirements for development in Cowlitz County. The zoning regulations are the principal tool for implementing the goals and policies of the Comprehensive Plan (Cowlitz County 1976).

The project area is zoned Heavy Manufacturing, as shown in Figure 4.1-2. The permitted uses in the Heavy Manufacturing zone are identified in CCC 18.10.236 and include “[s]torage and distribution of

petroleum, propane, liquefied gas, coal, and wood.” Minimum standards regarding lot area, setbacks, and lot coverage have not been established for Heavy Manufacturing zones, except for rear and side yard setback requirements for buildings exceeding 35 feet in height.

Portions of the direct impacts study area in Longview are subject to the zoning established by Title 19 of the LMC. The parcels in the City of Longview are within the Heavy Industrial and Mixed Use – Commercial/Industrial zones (City of Longview 2014).

Figure 4.1-2. Cowlitz County Zoning



The project area is an approximate 190-acre site primarily within the Applicant’s leased area, as well as the area where two proposed docks would be constructed in the Columbia River. The project area consists of all or portions of eight Cowlitz County tax parcels (619530400, 61950, 61953, 6195303, 61954, 61951, 61948, and WI3100003). These parcels are owned by Northwest Alloys, BNSF Railway Company (BNSF), and the Bonneville Power Administration (BPA) (Cowlitz County 2014). The project area also includes portions of the Columbia River owned by the Washington State Department of Natural Resources and subject to an aquatic lands lease (Lease No. 20-B09222).

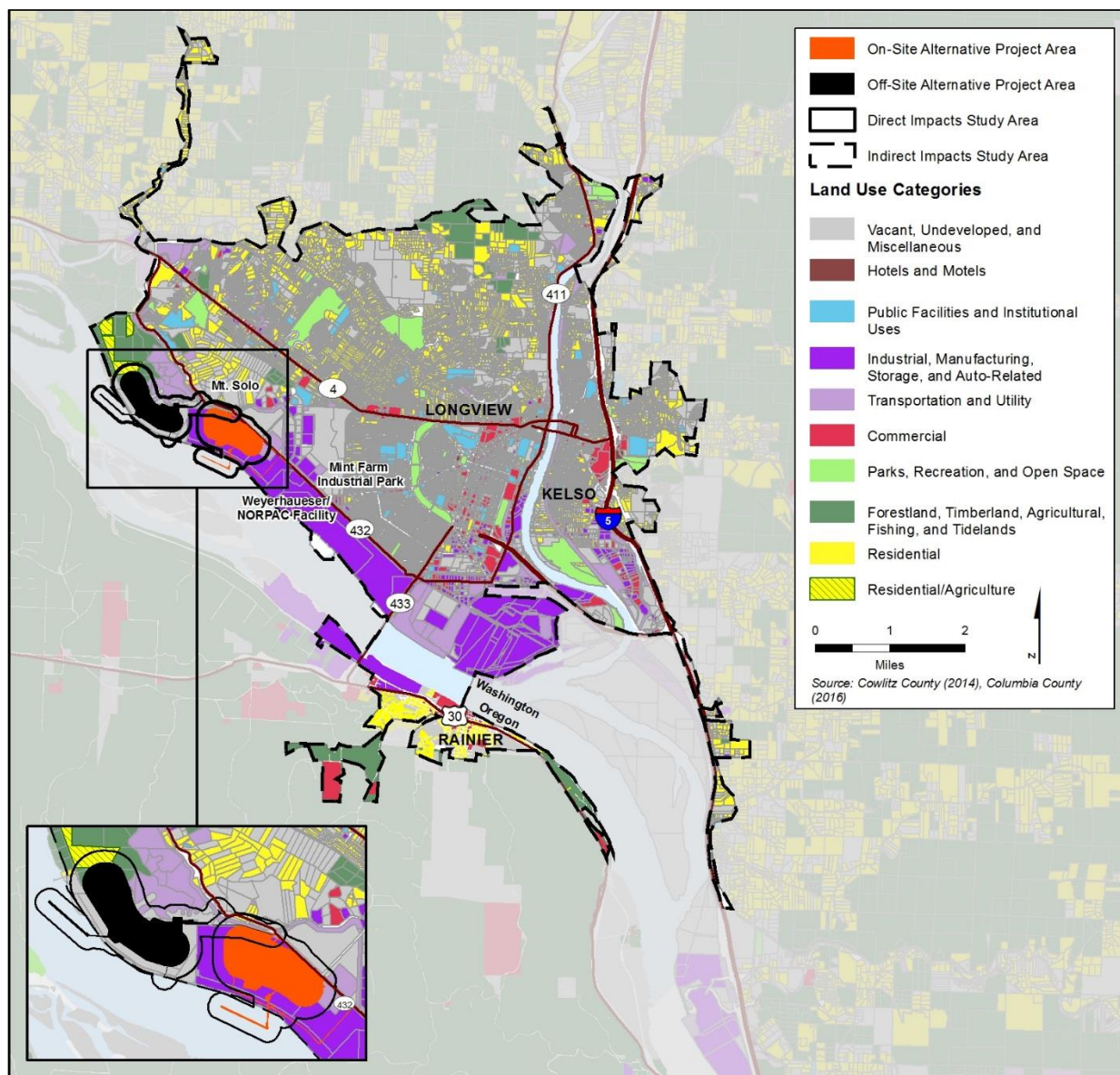
The Applicant's leased area has been in industrial use since 1941. Reynolds Metals Company constructed and operated an aluminum smelter and aluminum casting facility within the project area from 1941 until 2000. Northwest Alloys purchased the site in May 2000, and remains the owner. The Applicant now operates the existing facility on a ground lease with Northwest Alloys (Washington State Department of Ecology 2014). The Reynolds Metals Company facility was an intensive industrial use and, at the time of its closure in 2001, it employed approximately 800 workers and operated 24 hours per day, 7 days per week. In December 2004, Chinook Ventures purchased the facility assets and obtained a ground lease to store and transport fly ash, petroleum coke, alumina, and cement from 2004 to 2010. The Applicant purchased the facility assets from Chinook Ventures in January 2011, and now operates on a ground lease with Northwest Alloys. Today, portions of the project area are used for industrial purposes,² but overall the project area is underused, with industrial activities occurring at a much lower intensity than historical levels. The project area also includes two parcels currently owned by BPA and parcels owned by BNSF. The BPA parcels contain BPA facilities, including an access road and substation along Industrial Way. The parcels owned by BNSF contain portions of the Reynolds Lead rail line.

While most of the project area is developed, its undeveloped western portion consists of open areas of grass and wetlands, and there is an approximate 6-acre forested wetland in the northwest corner of the property. An extensive levee system along the Columbia River is maintained by the Consolidated Diking Improvement District (CDID) #1. Figure 4.1-3 shows the existing land uses in the vicinity of the project area; land uses in the indirect impacts study area are discussed further in this section.

The portions of the direct impacts study area within 500 feet of the project area contain predominantly industrial and transportation/utility land uses, along with two single-family residences. A portion of the direct impacts study area is occupied by an existing bulk product terminal within the Applicant's leased area, which includes upland facilities, a dock on the Columbia River capable of receiving Panamax-sized vessels, and rail and road connections. The bulk product terminal is used by the Applicant to import, store, and transfer bulk alumina and coal. Trains on the Reynolds Lead deliver and ship alumina and coal from the existing bulk product terminal. The area east of Industrial Way from the project area is also part of the Applicant's leased area and contains open land with overhead electrical wires and towers and a vacant building (formerly the Reynolds Longview Federal Credit Union) on the corner of Industrial Way and 38th Avenue.

Two single-family residences are across Industrial Way/Mt. Solo Road from the project area and are the only residential uses in the direct impacts study area. These houses are on wooded lots set back from the road.

² A full list of existing uses in the project area and the Applicant's leased area is provided in the *NEPA Land Use Technical Report* (ICF International and BergerABAM 2016).

Figure 4.1-3. Existing Land Use

While no formally designated recreation areas or activities occur in the upland portion of the direct impacts study area, the Columbia River is used for boating, fishing, and other forms of water recreation. In addition, the 146-mile Lower Columbia River Water Trail on the Columbia River passes by the project area (Lower Columbia Estuary Partnership 2014). No agricultural land or activities occur in the direct impacts study area.

The *NEPA Land Use Technical Report* lists the parcels and associated land uses located in the direct impacts study area.

Indirect Impacts Study Area

The indirect impacts study area is the Longview-Kelso urban area as defined in the 2010 U.S. Census and the unincorporated areas of Cowlitz County adjacent to the project area (which are not part of

the Census-defined urban area). The Cities of Longview and Kelso, Washington; and Rainier, Oregon, are in this study area (Figure 4.1-1).

The indirect impacts study area includes a range of industrial, residential, commercial, recreation, and public facility land uses. Development patterns throughout the study area generally consist of areas dominated by a single land use (e.g., residential neighborhoods, commercial shopping centers), except for limited mixed-use development in downtown Longview and Kelso.

There is a wide corridor of industrial and transportation/utility land uses along the Columbia River in the indirect impacts study area. This corridor includes the project area; the 550-acre Weyerhaeuser Company lumber products manufacturing site/North Pacific Paper Corporation facility along the Columbia River; the Port of Longview's 478-acre Port Industrial Marine property, which includes eight marine terminals; and the Mint Farm Industrial Park, a partially developed 445-acre industrial site operated as a public-private partnership between the City of Longview and the Weyerhaeuser Real Estate Development Company. The Barlow Point property, an undeveloped area immediately downstream (west) of the project area along the Columbia River and within the City of Longview, was recently purchased by the Port for future development (Port of Longview 2011).

Aside from the two residences located across Industrial Way/Mt. Solo Road from the project area, nearby residential uses include several single-family residences on Mount Solo, a steep hill approximately 0.5 mile north of the project area. More densely developed residential areas are located at least 1 mile away from the project area to the north and east in Longview and across the Cowlitz River in the City of Kelso. Commercial uses in the indirect impacts study area include retail, office, and storage uses concentrated along Ocean Beach Highway and in downtown Longview and Kelso.

The Lewis and Clark Bridge (State Route 433) spans the Columbia River upriver from the project area and provides access to Rainier, Oregon. This portion of the study area is approximately 2 to 5 miles from the project area; it is characterized by industrial and open-storage uses along the Columbia River, low-density residential and commercial development within Rainier, agricultural uses, and undeveloped and forested land.

A variety of public facilities serve the indirect impacts study area, including schools, police and fire facilities, libraries, community centers, health care facilities, and government facilities. The *NEPA Land Use Technical Report* identifies the locations of the major public facilities in the indirect impacts study area.

Nearby Parks and Recreation Facilities

There are no parks or recreation facilities in the study area. However, the Columbia River is used for boating, fishing, and other forms of water-related recreation. The 146-mile-long Lower Columbia River Water Trail, which extends from Bonneville Dam to the mouth of the Columbia River, passes by the project area. Recreational boaters must share the river with commercial vessels, including oceangoing cargo ships. The nearest parks are Roy Morse Park, located 1 mile north of the project area, Mint Valley Golf Course, located 1 mile northeast of the project area, and a primitive campsite (i.e., campsite with no support facilities) on Lord Island 0.8 mile south of the project area (Lower Columbia Estuary Partnership 2014). The nearest boat launches are located at Rainier Riverfront Park, across the Columbia River in Rainier, Oregon, approximately 4 miles upstream of the project area, and at Willow Grove Boat Launch in Washington, approximately 4 miles downstream of the

project area. The *NEPA Land Use Technical Report* includes a map of these nearby park and recreation uses.

Agricultural Land

As defined previously, the study area for agricultural land uses is the project area and the area within 500 feet of the project area. There is no agricultural zoned land or agricultural land use in the study area.

4.1.4.2 Off-Site Alternative

Land Use Plans and Public Policies

Land use in the study areas for the Off-Site Alternative are guided by a variety of land use plans and public policies, which include comprehensive plans, shoreline master programs (SMPs), critical area regulations, and other plans. The Off-Site Alternative project area is located in Longview and unincorporated Cowlitz County. The applicable land use plans and public policies for each jurisdiction are discussed in detail in the *NEPA Land Use Technical Report*. The *Cowlitz County Comprehensive Plan* (Cowlitz County 1976), *City of Longview Comprehensive Plan* (City of Longview 2006), and *City of Longview Shoreline Master Program* (City of Longview 2015b) are summarized below.

City of Longview and Cowlitz County Comprehensive Plans

The City of Longview comprehensive plan designates the southern portion of the Off-Site Alternative project area as Heavy Industrial and the northern portion as Mixed-Use Residential/Commercial. Appropriate uses within the Heavy Industrial designation include manufacturing and fabrication, warehousing and storage, wholesale distribution, product processing and packaging, energy production, and shipping (City of Longview 2014).

The *City of Longview Comprehensive Plan* states the Mixed-Use Residential/Commercial designation “is intended to encourage an integration of residential, village style commercial, waterfront commercial, and office uses under a planned development process, which encourages creativity in site planning by allowing flexibility in lot and building arrangements and a mix of uses.” The Port of Longview has filed an application to change the Mixed-Use Residential/Commercial designation within the Off-Site Alternative project area to a Heavy Industrial designation. In late 2015, the City of Longview City Council postponed the public hearing on this application until the City of Longview Planning Commission could complete its update of the city’s comprehensive plan (City of Longview 2015c).

The County’s comprehensive plan designates the portion of the project area within the County as Heavy Industrial. The purpose and goals of the industrial classification are discussed above in Section 4.1.4.1, *On-Site Alternative, Cowlitz County Comprehensive Plan*.

City of Longview Shoreline Master Program

The City of Longview Shoreline Master Program designates the shoreline environment adjacent to the project area as High Intensity (City of Longview 2015a). As stated in the City of Longview Shoreline Master Program, “the purpose of the High Intensity environment is to provide for high intensity water-oriented commercial, transportation, and industrial uses while protecting existing

shoreline ecological functions and restoring ecological functions in areas that have been previously degraded” (City of Longview 2015b).

The in-water activities associated with the project area would fall within the Aquatic shoreline designation. The purpose of the Aquatic designation “is to protect, restore, and manage the unique characteristics and resources of the area waterward of the OHWM.” The Aquatic designation at this location may permit dredging activities in support of a water-dependent use, if the City of Longview finds the need is demonstrated, and it permits new mooring structures for water-dependent uses or public access.

A discussion of the City of Longview Shoreline Master Program, including its policy goals and objectives, is provided in the *NEPA Land Use Technical Report*.

Land Use

The following section presents the characteristics of the existing environment related to land use for the Off-Site Alternative project area and study areas.

Direct Impacts Study Area

The direct impacts study area for the Off-Site Alternative contains a mix of residential, agricultural, light industrial, transportation, and utility uses.

The project area for the Off-Site Alternative is approximately 220 acres in an area referred to locally as Barlow Point. Most of the project area is located within Longview city limits and owned by the Port of Longview, although a small portion of the project area extends onto privately owned property in unincorporated Cowlitz County.

The portion of the project area within the City of Longview is zoned Heavy Industrial per LMC 19, which is described in the previous section. The City of Longview Heavy Industrial zoning designation of the project area is inconsistent with the Mixed-Use Residential/Commercial comprehensive plan designation in the northern portion of the project area. As noted above, there is a pending application before the City of Longview to change the comprehensive plan designation from Mixed-Use Residential/Commercial to Heavy Industrial. If adopted, this application would address the inconsistency between the comprehensive plan and the zoning ordinance.

The portion of the project area within unincorporated Cowlitz County is located in the Heavy Manufacturing zone and the Forestry-Recreation zone. As discussed above, the purpose of the Heavy Manufacturing zoning classification is to allow heavy industrial uses. Per CCC 18.10.255, the purpose of the Forestry-Recreation zone is “to provide for the maintenance of a stable commercial forest land base...”

The project area is currently undeveloped and contains open land and vegetated areas (Figure 4.1-3). The project area is adjacent to an existing corridor of industrial and utility/transportation land uses along the Columbia River to the southeast.

There are two single-family residential structures in the direct impacts study area along Barlow Point Road. Agricultural land uses occur in the direct impacts study area, north of the project area on parcels within unincorporated Cowlitz County. The closest other residential areas are approximately 0.25 mile north of the project area along Barlow Point Road. There are also two

residential land uses on the north side of Mt. Solo Road near the proposed entrance and rail access to the project area.

While no formally designated recreation sites or activities occur in the upland portion of the direct impacts study area, the Columbia River is used for boating, fishing, and other forms of water recreation. In addition, the 146-mile-long Lower Columbia River Water Trail, which extends from Bonneville Dam to the mouth of the Columbia River, passes by the project area (Lower Columbia Estuary Partnership 2014).

The *NEPA Land Use Technical Report* lists the parcels and associated land uses located in the direct impacts study area.

Indirect Impacts Study Area

The indirect impacts study area for the Off-Site Alternative is the same as the indirect impacts study area for the On-Site Alternative.

Nearby Parks and Recreation Facilities

There are no parks and recreation facilities in the project area for the Off-Site Alternative or within 0.5 mile of the project area. As with the On-Site Alternative, the Lower Columbia River Water Trail passes by the project area. Primitive campsites are located on Lord and Walker Islands, approximately 0.5 to 1 mile from the project area. Roy Morse Park is approximately 1 mile north of the project area.

Agricultural Land

According to Ecology farm soil maps, the entire project area and surrounding area within 500 feet of the project area, except for the levees along the Columbia River, consist of soils designated as “prime farmland if drained” and “prime farmland if irrigated” (Washington State Department of Ecology 2008). The northern portion of the project area extends onto parcels containing agricultural uses. Adjacent parcels within 500 feet to the north also contain agricultural uses.

4.1.5 Impacts

This section describes the potential direct and indirect impacts related to land use from construction and operation of the proposed export terminal.

4.1.5.1 On-Site Alternative

This section describes the potential impacts in the study areas from construction and operation of the proposed export terminal at the On-Site Alternative location.

Construction—Direct Impacts

Chapter 3, *Alternatives*, describes construction-related activities in the project area. Construction would not result in direct impacts on land use because the project area is currently an industrial use and would remain an industrial use upon completion of construction activities.

Construction—Indirect Impacts

Construction would not result in indirect impacts on land use because it would be limited to the project area and construction activities would not affect land use outside the project area.

Operations—Direct Impacts

Operations would result in direct impacts. Operations-related activities are described in detail in Chapter 3, *Alternatives*.

Land Use

Direct impacts on land use from operations would include the following.

Existing Land Uses

The On-Site Alternative would modify existing land use in the project area by replacing the existing low-intensity industrial uses with a new export terminal. The terminal would include a rail loop system and rail unloading facilities, coal handling and stockpile areas, shiploading facilities (including the two new docks in the Columbia River), and associated rail and coal handling facilities. The On-Site Alternative would be a more intensive industrial use of the project area than under existing conditions. However, because the project area and surrounding area already contain industrial uses, the On-Site Alternative would not change the land use of the project area substantially.

New Industrial Use

The On-Site Alternative would introduce a new, intensive industrial use near two single-family residences north of the project area in the direct impacts study area. These residences currently coexist with industrial uses in the project area and nearby. Therefore, the On-Site Alternative would not directly affect these uses with respect to land use compatibility.

Parks and Recreation Facilities

The On-Site Alternative would not directly affect the continued use of the Columbia River for recreation purposes, nor would it have any impact on the Willow Grove and Rainier Riverfront Park boat launches. There are no other parks or recreation facilities in the study area. The On-Site Alternative would not result in any direct impacts on parks and recreation facilities.

Agricultural Land

There is no land zoned for agriculture nor any ongoing agricultural uses in the study area. Therefore, the On-Site Alternative would not result in any direct impacts on agricultural land uses.

Operations—Indirect Impacts

Operation of the proposed export terminal at the On-Site Alternative location would result in the following indirect impacts. Operations-related activities are described in Chapter 3, *Alternatives*.

Land Use

Operation of the terminal would be compatible with land use conditions in the indirect impacts study area and with the existing industrial land uses along the Columbia River, in particular the Weyerhaeuser and Port facilities immediately upriver from the project area.

Operation of the terminal would also not change land use patterns in the remainder of the indirect impacts study area. Most land uses outside the corridor of industrial and transportation/utility uses along the Columbia River are located at least 1 mile from the project area. Residential areas on Mount Solo are approximately 0.5 mile north of the project area. Other residential neighborhoods to the north are buffered from the project area by Mount Solo. Land uses in the Rainier, Oregon portion of the study area would continue to be separated from the project area by the Columbia River. Thus, the On-Site Alternative would not affect land use conditions in the Rainier area.

Increased rail traffic would use existing rail infrastructure and would not affect current land use. The On-Site Alternative would increase commercial ship traffic along the Columbia River. However, the Columbia River is currently used for marine transportation. The additional vessel traffic would not change this ongoing use.

Overall, constructing and operating the proposed export terminal at the On-Site Alternative location would not change land use in the indirect impacts study area.

Parks and Recreation Facilities and Agricultural Land

Operating the terminal at full capacity would introduce approximately 70 additional ships per month (840 per year) to the Columbia River. Although the On-Site Alternative would increase commercial vessel traffic in the river, recreational users (such as those using the river for fishing or boating) currently must take account of commercial vessels, including large oceangoing ships. With the additional vessels, the On-Site Alternative would result in an approximate 46% increase over current river vessel traffic.³ While this would be a substantial increase, project-related vessels would operate in the navigation channel except when arriving or departing the proposed docks under the assistance of tugs, and operations would be similar to current vessel traffic. Recreational boats are smaller and are not limited to using the navigation channel, and the Willow Grove and Rainier Riverfront Park boat launches are distant from the project area. Therefore recreational boaters would likely not be substantially affected by vessels and tugs using the proposed docks. The On-Site Alternative would not result in indirect impacts on parks and recreation facilities or on agricultural land.

Consistency with Zoning

The On-Site Alternative would be consistent with the existing Heavy Manufacturing zoning designation and comply with currently permitted uses and associated development standards and requirements. Per CCC 18.10.236, the proposed export terminal would be a permitted use. Furthermore, minimum standards regarding lot area, setbacks, and lot coverage have not been established for Heavy Manufacturing zones, except for rear and side yard setback requirements for buildings exceeding 35 feet in height (CCC 18.10.501). The On-Site Alternative would comply with

³ Based on 2014 large commercial vessel traffic in the Columbia River according to Bar Pilots records, which was 3,638 transits or 1,819 vessels. See Chapter 6, Section 6.4, *Vessel Transportation*, Table 6.4-7.

the limited rear and side yard setback requirements for any proposed structures exceeding 35 feet in height. Overall, the On-Site Alternative would be consistent with existing zoning regulations.

Consistency with Land Use Plans and Public Policies

The On-Site Alternative's consistency with the Cowlitz County Comprehensive Plan and SMP are summarized below. A full discussion of the On-Site Alternative's consistency with all applicable land use plans and public policies is provided in the *NEPA Land Use Technical Report*.

Cowlitz County Comprehensive Plan

As discussed above, the current Comprehensive Plan designates the project area as Heavy Industrial. The On-Site Alternative would maintain the industrial use of the project area consistent with the Comprehensive Plan designation. Furthermore, the Comprehensive Plan articulates several goals regarding industrial development applicable to the On-Site Alternative. The On-Site Alternative would be consistent with these goals, as analyzed in the *NEPA Land Use Technical Report*.

Cowlitz County Shoreline Management Master Program

The On-Site Alternative would result in development within the shoreline area regulated by the County's SMP. It designates the shoreline environment at the project area as urban, which includes areas suitable for intensive recreation and residential, industrial, and commercial development. The On-Site Alternative would be consistent with the objective of the urban designation. Ports and water-related industries, such as the proposed export terminal, are permitted uses on urban shorelines per the SMP.

Newly proposed dredging is a conditional use on urban shorelines. Therefore, new development in the project area would require a Shoreline Substantial Development Permit for any new structures within the shoreline jurisdiction and a Conditional Use Permit for proposed dredging activities.

4.1.5.2 Off-Site Alternative

This section describes the potential impacts in the study areas from construction and operation of the proposed export terminal at the Off-Site Alternative location.

Construction—Direct Impacts

Construction of the proposed export terminal at the Off-Site Alternative location would result in the following direct impacts. Construction-related activities are described in Chapter 3, *Alternatives*.

Existing Land Uses

Construction would change the land use of the project area from undeveloped to industrial. Construction activities would be close to the two single-family residences in the direct impacts study area. Construction activities would be temporary and would not change land use patterns outside the project area during construction.

Construction—Indirect Impacts

Construction of the proposed export terminal at the Off-Site Alternative location would not result in indirect impacts on land use because construction activities would be limited to the project area and would not affect land use outside the project area.

Operations—Direct Impacts

Land Use

Existing Land Uses

The Off-Site Alternative would develop the project area with a terminal that includes a rail loop system and rail unloading facilities, coal handling and stockpile areas, shiploading facilities (including the two new docks in the Columbia River), and associated rail and coal handling facilities. This would convert an undeveloped agricultural area to a heavy industrial use.

New Industrial Use

The Off-Site Alternative would introduce a new industrial use near two existing single-family residential structures with agricultural uses located north of the project area. While the existing land use of these parcels are single-family residential and agricultural, the Cowlitz County Comprehensive Plan designates these parcels for heavy industrial use. Given the intensity of the terminal use, its proximity to the residential uses, and the lack of buffers (e.g., hills, rivers) between the uses, the Off-Site Alternative would not be compatible with the adjacent residential/agricultural uses to the north.

Two residential uses on the north side of Mt. Solo Road would also be in the direct impacts study area. As discussed above, these residences currently coexist with industrial uses nearby (e.g., in the On-Site Alternative project area). These residences would be within 500 feet of the entrance to the Off-Site Alternative project area and rail access, but not within 500 feet of the stockpiles, rail loop, and other facilities. Therefore, the Off-Site Alternative would not directly affect these uses with respect to land use compatibility.

Parks and Recreation Facilities

The Off-Site Alternative would not directly affect the continued use of the Columbia River for recreation purposes, nor would it have any impact on the Willow Grove and Rainier Riverfront Park boat launches. There are no other parks or recreation facilities in the study area. The Off-Site Alternative would not result in direct impacts on parks and recreation facilities.

Operations—Indirect Impacts

Land Use

The Off-Site Alternative would be compatible with land use in the indirect impacts study area, including the existing bulk product terminal operated by the Applicant, Weyerhaeuser, and other Port of Longview facilities.

Residential neighborhoods northeast of the project area would be buffered from project impacts by Mount Solo. Land uses within the Rainier, Oregon portion of the study area would continue to be

separated from the project area by the Columbia River and would not be affected by the proposed export terminal.

The *Cowlitz County Comprehensive Plan* designates the land north and south of the Off-Site Alternative project area for industrial use. Therefore, construction and operation of the terminal would not likely affect land uses near the Barlow Point area.

Increased rail traffic from the Off-Site Alternative would use existing rail infrastructure in the indirect impacts study area and would not affect current land use. The Off-Site Alternative would increase commercial vessel traffic along the Columbia River. However, the Columbia River is currently used for marine transportation. The additional vessel traffic would not change this ongoing use.

Overall, the Off-Site Alternative would not change land use in the indirect impacts study area.

Parks and Recreation Facilities and Agricultural Land

The Off-Site Alternative would introduce the same amount of vessel traffic as the On-Site Alternative. As with the On-Site Alternative, it is not expected that recreational boaters would be substantially affected by vessels and tugs serving a terminal at the Off-Site Alternative location. The Off-Site Alternative would not result in indirect impacts on park and recreation facilities or agricultural land.

Consistency with Zoning

The portion of the Off-Site Alternative within Longview would be consistent with the zoning designation of Heavy Industrial and would comply with the permitted uses and associated development standards and requirements. The Off-Site Alternative within unincorporated Cowlitz County would be consistent with the stated purpose of the Cowlitz County Heavy Manufacturing zoning designation and would comply with the permitted uses and associated development standards and requirements.

A portion of the Off-Site Alternative location would lie within the Cowlitz County Forestry-Recreation zoning designation. The Off-Site Alternative would not be consistent with the stated purpose of the Forestry-Recreation zoning designation and would require an amendment to the Cowlitz County zoning map.

Consistency with Land Use Plans and Public Policies

Consistency with the City of Longview and Cowlitz County Comprehensive Plan and SMP are summarized below. A full discussion of the Off-Site Alternative's consistency with applicable land use plans and public policies is provided in the *NEPA Land Use Technical Report*.

City of Longview and Cowlitz County Comprehensive Plans

Within Longview, the southern portion of the project area is designated as Heavy Industrial and the northern portion is designated Mixed-Use Residential/Commercial. The Off-Site Alternative would be consistent with the City of Longview's Heavy Industrial comprehensive plan designation, but would not be consistent with the Mixed-Use Residential/Commercial designation. As noted above there is a pending application before the City of Longview to change the comprehensive plan designation from Mixed-Use Residential/Commercial to Heavy Industrial. If adopted, this

application would address the inconsistency between the comprehensive plan and the zoning ordinance. If this application is not adopted, this alternative would require a comprehensive plan amendment or other coordination with the City of Longview.

The portion of the project area within Cowlitz County is designated Heavy Industrial in the *Cowlitz County Comprehensive Plan*. The Off-Site Alternative would be consistent with this designation because it would expand industrial use in the project area and would be supportive of the plan's various policies related to industrial land uses.

City of Longview Shoreline Master Program

The Off-Site Alternative project area is within the High Intensity and Aquatic shoreline designations of the City of Longview Shoreline Master Program. The Off-Site Alternative would be consistent with the purpose of the High Intensity and Aquatic shoreline designations and would comply with the management policies of the designations. The Off-Site Alternative would be a permitted industrial use within the High Intensity shoreline designation. The proposed docks and dredging activities under the Off-Site Alternative may be permitted within the Aquatic designation because they would support a water-dependent use. The Off-Site Alternative would be consistent with the policies of the City of Longview Shoreline Master Program.

4.1.5.3 No-Action Alternative

Under the No-Action Alternative, the Corps would not issue a Department of the Army permit authorizing construction and operation of the proposed export terminal. As a result, impacts resulting from constructing and operating the terminal would not occur. In addition, not constructing the terminal would likely lead to expansion of the adjacent bulk product business onto the export terminal project area. The following discussion assesses the likely consequences of the No-Action Alternative related to land use.

Construction

Although the proposed export terminal would not be constructed under the No-Action Alternative, new construction, demolition, or related activities to expand the adjacent bulk product terminal could occur at the On-Site Alternative location. Expansion of the bulk product terminal facilities could involve demolition and replacement of existing buildings. However, no new docks would be built and no new dredging would occur. The No-Action Alternative would likely not result in indirect construction impacts on land use because construction would be limited to the project area and would not change land use outside the project area.

Operations

As with the On-Site Alternative, the No-Action Alternative could expand existing or introduce a new industrial use to the project area. However, because the project area and surrounding area are already designated for industrial uses, the No-Action Alternative would likely not change the land use of the project area. The No-Action Alternative would not directly affect parks and recreation land uses because of the distance between the project area and such uses, nor would it result in direct impacts on agricultural land uses.

If the No-Action Alternative resulted in expanding the bulk product terminal, it could increase rail and truck traffic. This increase in traffic would likely be compatible with existing industrial land uses along these transportation corridors. Land uses adjacent to the rail lines currently coexist with rail traffic, including the transportation of coal and other commodities. The No-Action Alternative would likely not change land uses along the rail corridors. The No-Action Alternative would likely be compatible with land use in the indirect impacts study area, including the existing concentration of industrial uses along the Columbia River. Overall, the No-Action Alternative would not be expected to result in indirect impacts on land or shoreline use.

4.1.6 Required Permits

The following required permits would be required for the proposed export terminal.

4.1.6.1 On-Site Alternative

The On-Site Alternative would require the following permits for land use.

- **Shoreline Substantial Development—Cowlitz County Department of Building and Planning.** The On-Site Alternative would result in new development in the shoreline area regulated by the County's SMP. Therefore, it would require a Shoreline Substantial Development Permit.
- **Shoreline Conditional Use Permit—Cowlitz County Department of Building and Planning/Washington State Department of Ecology.** The On-Site Alternative may require dredging activities on urban shorelines. New dredging is a conditional use on urban shorelines; the On-Site Alternative would require a Conditional Use Permit from the County. The Conditional Use Permit requires final approval from Ecology.
- **Critical Areas Permit—Cowlitz County Department of Building and Planning.** The On-Site Alternative would be constructed within designated critical areas and therefore would require a Critical Areas Permit.
- **Building and Site Development Permits—Cowlitz County Department of Building and Planning.** The On-Site Alternative would require building and site development permits, such as fill and grade permits, plumbing permits, fire permits, mechanical permits, etc., from the Cowlitz County Department of Building and Planning for any earthwork, construction of new structures, or alteration of existing structures.

4.1.6.2 Off-Site Alternative

The Off-Site Alternative would require the following permits for land use.

- **Shoreline Substantial Development—City of Longview Community Development Department.** The Off-Site Alternative would result in new development within the shoreline area regulated by the City of Longview Shoreline Master Program. Therefore, it would require an SSDP from the City of Longview.
- **Critical Areas Permit—City of Longview Community Development Department and Cowlitz County Department of Building and Planning.** The Off-Site Alternative would be constructed within designated critical areas and therefore would require critical areas permits from Cowlitz County and the City of Longview.

- **Comprehensive Plan Amendment—City of Longview Planning Commission and City Council.** The Off-Site Alternative would be inconsistent with the City of Longview's comprehensive plan designation for the northern portion of the project area. Therefore, the Off-Site Alternative would require an amendment to the City of Longview's comprehensive plan if the Port of Longview's application to change the designation to Heavy Industrial is not approved.
- **Zoning Map Amendment—Cowlitz County Planning Commission.** The Off-Site Alternative would be inconsistent with the Forestry-Recreation zoning on a portion of the project area. Therefore, the Off-Site Alternative would require an amendment to the Cowlitz County zoning map.
- **Building and Site Development Permits—City of Longview Community Development Department and Cowlitz County Department of Building and Planning.** The Off-Site Alternative would require building and site development permits, such as fill and grade permits, plumbing permits, fire permits, mechanical permits, etc., from the City of Longview Community Development Department and the Cowlitz County Department of Building and Planning for any earthwork, construction of new structures, or alteration of existing structures occurring within their jurisdiction.

4.2 Social and Community Resources

The social and community resources of an area include the public services in a community that bring people together and create cohesion. These resources include population characteristics, economic activity, and utility services. Changes to social and community resources occur when a project affects any of these elements.

This section evaluates the potential adverse impacts on social and community resources resulting from construction and operation of the proposed export terminal. Social and community resources addressed in this section include social and community cohesion, public services, the local economy, and utilities. Potential impacts on minority and low-income populations are also evaluated in this section, in an environmental justice analysis.¹

The environmental justice analysis addresses potential disproportionately high and adverse effects on minority and low-income populations. This analysis describes the minority and low-income populations in the study area. It then describes potential impacts on these populations from construction and operation of the terminal, and assesses whether these impacts would be disproportionately high and adverse.

4.2.1 Regulatory Setting

Laws and regulations relevant to social and community resources are summarized in Table 4.2-1. As shown, these laws and regulations pertain to environmental justice.

Table 4.2-1. Regulations, Statutes, and Guidelines for Environmental Justice

Regulation, Statute, Guideline	Description
Federal	
Title VI of the Civil Rights Act of 1964 (42 USC 2000d) as amended by the Civil Rights Restoration Act of 1987 (P.L. 100-209)	Prohibits discrimination based on race, color, sex, and national origin in the provision of benefits and services resulting from federally assisted programs and activities.
Americans with Disabilities Act, 42 USC 126 § 12101 et seq. (as amended)	Prohibits discrimination based on disability.
Presidential Executive Order 12898, Environmental Justice	Promotes nondiscrimination in federal programs substantially affecting human health and the environment and provides minority and low-income community access to public information on, and an opportunity for public participation in, matters relating to human health or the environment.
Notes: USC = United States Code; P.L. = Public Law	

¹ The U.S. Environmental Protection Agency (EPA) defines environmental justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”

4.2.2 Study Area

The study area for direct and indirect impacts on social and community resources include study areas for each element of the social and community resource analysis: social and community cohesion and public services, the local economy, utilities, and environmental justice. These study areas are based on the Corps *NEPA Scope of Analysis Memorandum for Record* (MFR) (2014) and were adjusted to reflect the specific community elements near the project areas. The study areas for each element are listed below.

- **Social and Community Cohesion and Public Services.** For direct impacts, the study area is the project area and the area within 0.5 mile of the project area. For indirect impacts, the study area is the project area and the area within 0.5 mile of the Reynolds Lead and BNSF Railway Company [BNSF] Spur rail corridor. Figure 4.2-1 illustrates these study areas.
- **Local Economy.** For direct impacts, the study area includes the Cities of Kelso and Longview. For indirect impacts, the study area is Cowlitz County.
- **Utilities.** For direct impacts, the study area is the project area and the area within 0.5 mile of the project area. This study area only relates to construction and operation of the terminal at the On-Site Alternative and Off-Site Alternative locations. For indirect impacts, the study area is the area within 0.5 mile of the project area.
- **Environmental Justice.** For direct impacts, the study area is the project area and the area within approximately 1 mile of the project area (Figure 4.2-2). This study area only relates to construction and operation of the terminal at the On-Site Alternative and Off-Site Alternative locations. For indirect impacts, the study area is the project area and the area within 0.5 mile of the Reynolds Lead and BNSF Spur rail corridor.

4.2.3 Methods

This section describes the sources of information and methods used to evaluate the potential impacts on social and community resources associated with the construction and operation of the proposed export terminal.

4.2.3.1 Information Sources

The following sources of information were used to identify the potential impacts of the proposed export terminal on social and community resources in the study areas.

- U.S. Census Bureau 2000 Census data, 2010 Census data, and 2009–2013 American Community Survey (ACS) data available on American FactFinder
- U.S. Census Bureau 2015 On The Map data
- U.S. Census Bureau 2013 Zip Code Business Patterns data
- U.S. Department of Labor, Bureau of Labor Statistics Local Area Unemployment Statistics
- State of Washington Office of Financial Management data
- Cowlitz Economic Development Council data
- Cowlitz-Wahkiakum Council of Governments data
- Various websites to inventory public service facilities in the study areas, including Google Maps and websites for Cowlitz County and the City of Longview

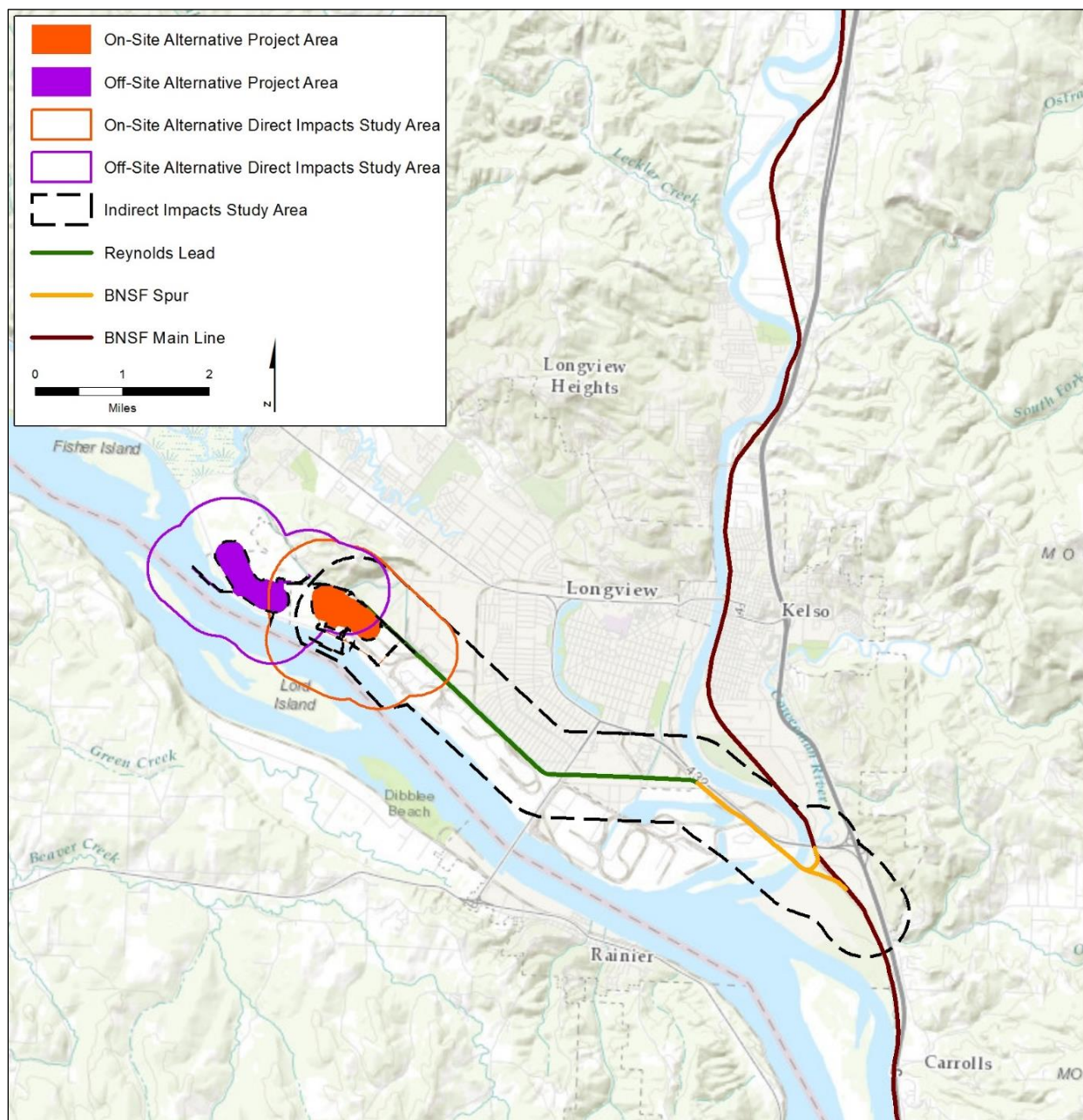
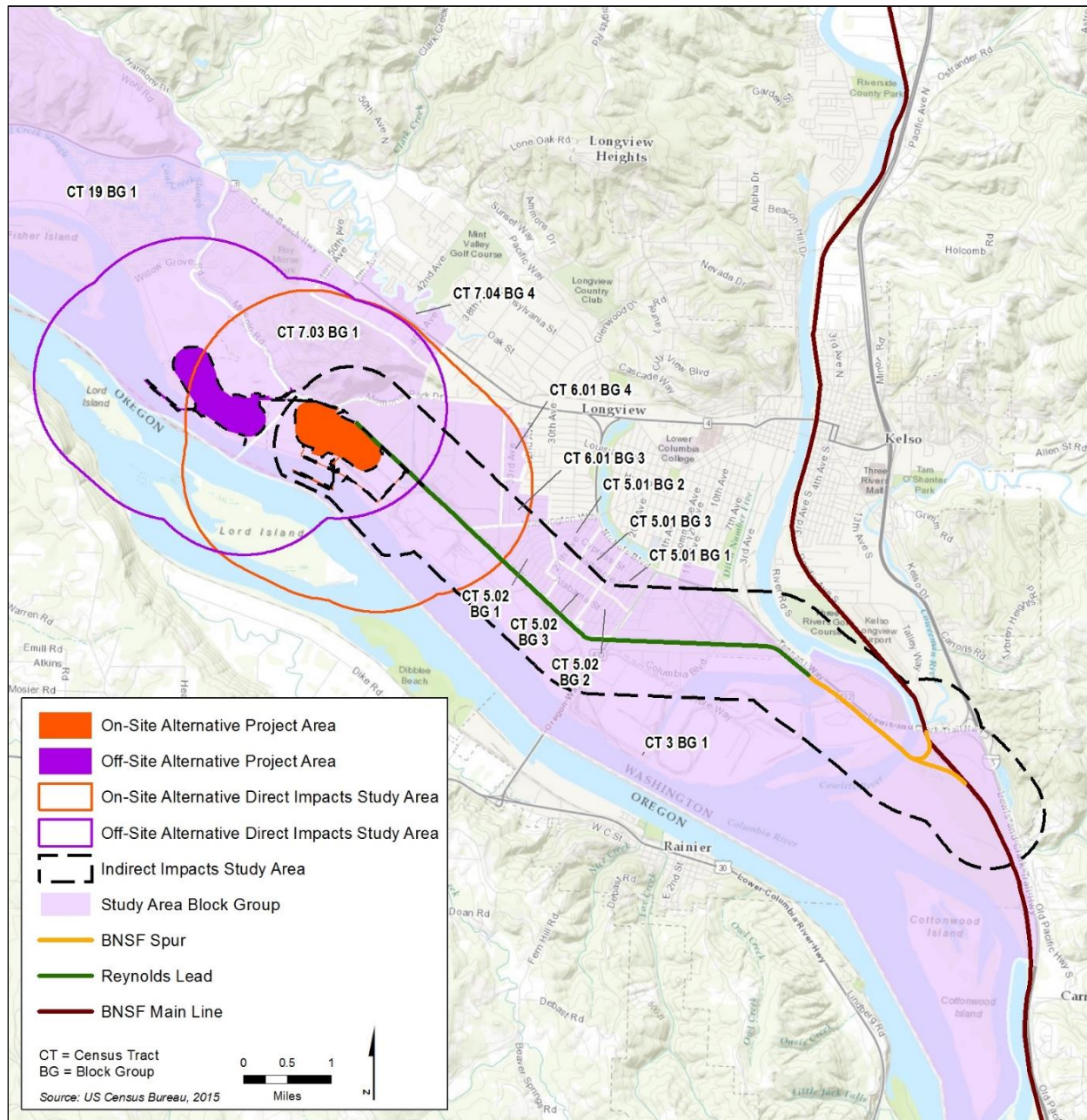
Figure 4.2-1. Study Areas for Social and Community Cohesion and Public Services

Figure 4.2-2. Environmental Justice Study Area

4.2.3.3 Impact Analysis

The following methods were used to evaluate the potential impacts of the proposed export terminal on social and community resources.

Social and Community Cohesion and Public Services

This analysis describes existing social and community cohesion in terms of the area's population characteristics, the various public services and social institutions serving the community and, thus, creating cohesion (such as parks, schools, and places of religious worship), and the access and linkages between the community and those services. Demographic data were compiled based on the U.S. Census Bureau (census) block group boundaries within the social and community cohesion direct impacts study area: Census Tract 3 Block Group 1, Census Tract 7.03 Block Group 1, and Census Tract 19 Block Group 1 (Figure 4.2-3). Because of the proximity of the On-Site Alternative and Off-Site Alternative project areas, the same block groups represent the direct impacts study area for social and community cohesion and public services.

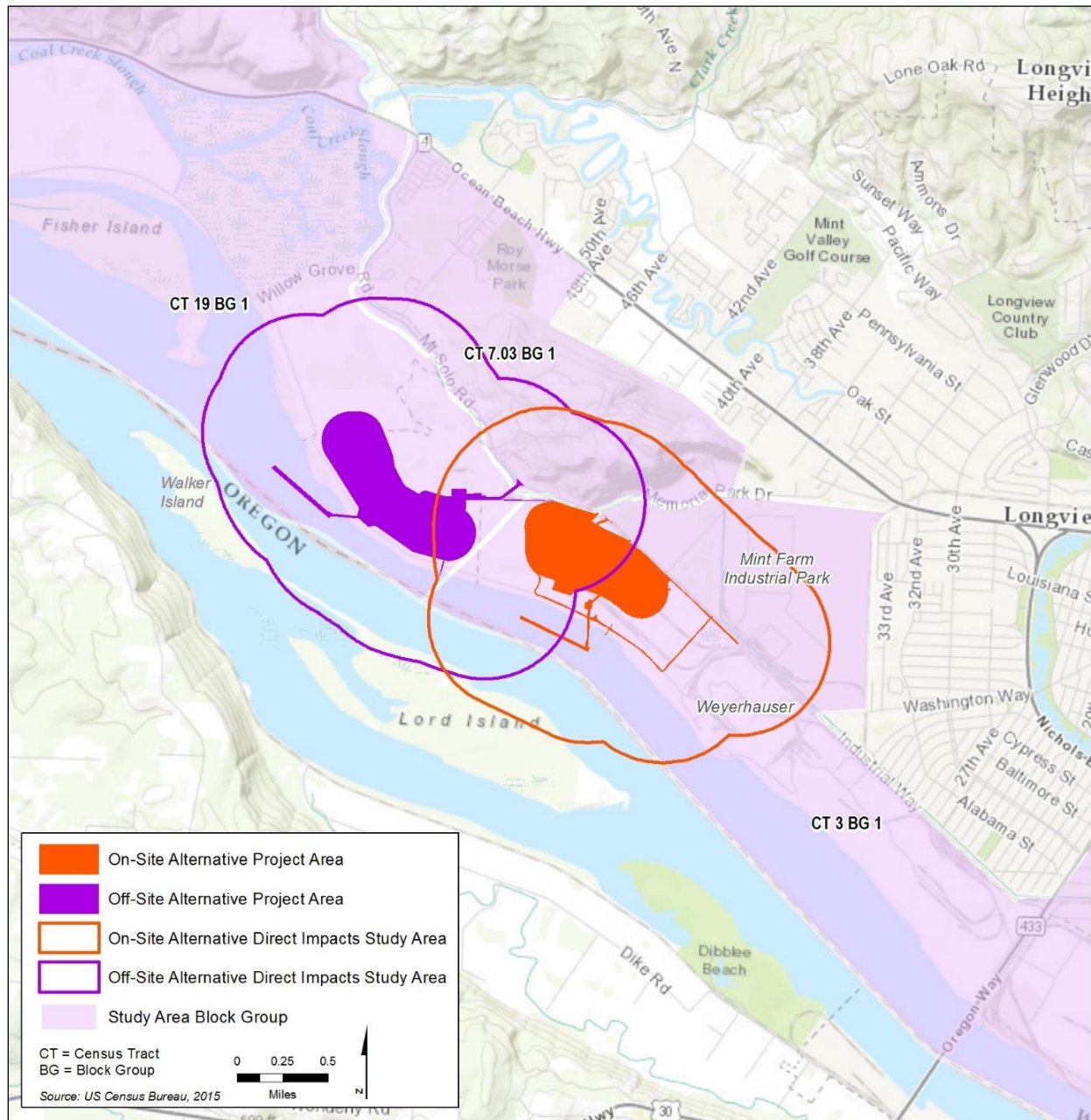
The analysis then evaluates if construction and operation of the proposed export terminal could affect social and community cohesion by altering population characteristics, dividing or isolating a neighborhood, or separating residents from public services by changing travel patterns. This evaluation considers the location of public services in the study areas relative to characteristics of the On-Site Alternative and Off-Site Alternative. Impacts on social and community cohesion occur when an action does one of the following.

- Divides or isolates part of a neighborhood.
- Displaces or alters a public service facility, such as an educational facility, library, public park, or recreational facility.
- Generates substantial new development or changes property values leading to the displacement of substantial portions of the existing community.

Impacts on public services occur when an action introduces a new population or service demand affecting the services delivered by a public service facility, or if an action separates residents from public services by changing travel patterns or access to the service.

Local Economy

The assessment of the local economy includes information describing existing economic conditions, including data on the labor force, unemployment, job inflows, major employers, local tax revenues, and business activity. Future developments that would affect economic activity are also identified. The impact assessment projects potential direct, indirect, and induced economic and fiscal benefits associated with the proposed export terminal, and evaluates the terminal's potential to affect business activity. This assessment is not intended to be a cost-benefit analysis.

Figure 4.2-3. Census Tract and Block Groups in the Direct Impacts Study Area for Social and Community Cohesion and Public Services

The projections of potential direct, indirect, and induced economic and fiscal benefits presented in this section are derived from the study titled *Economic and Fiscal Impacts of Millennium Bulk Terminals Longview* prepared by BERK (2012) on behalf of the Applicant. The data provided by this study have not been independently verified by the lead agency. This study used an input-output model to estimate the economic and fiscal impacts of the proposed project in terms of jobs, wages, and economic output; specific technical details on the input-output model were not provided by the Applicant. Estimates of indirect and induced economic impacts were modeled using the Washington State Input-Output Model developed for the Washington State Office of Financial Management. The study also estimated the tax revenues generated by the construction and operation of the proposed project.

Utilities

The assessment of utilities focuses on water utilities, including potable water and wastewater service, and electrical utilities. Electricity and natural gas consumption are addressed in Section 4.7, *Energy*. This evaluation assesses whether the proposed export terminal would affect utility service directly by altering the water supply or wastewater conveyance system or electrical utilities. The evaluation also assesses the potential for indirect impacts from new demands on water supply capacity and/or wastewater treatment capacity.

Environmental Justice

The environmental justice assessment used guidance published by the Council on Environmental Quality (CEQ) (1997), which involved the following six steps.

1. Identify the area where the proposed project could cause adverse effects either during construction or operation (i.e., the study area, described in Section 4.2.2, *Study Area*).
2. Compile minority and low-income data for the census block groups in the study area and identify minority and low-income populations.
3. Identify the proposed project's potential adverse effects on minority and low-income populations.
4. Evaluate the proposed project's potential adverse effects on minority and low-income communities relative to the effects on the overall population to determine if potential adverse effects on those communities would be disproportionately high and adverse.
5. Discuss mitigation measures for any identified disproportionate adverse effects.
6. Describe the public outreach and participation process for effectively engaging minority and low-income populations in the decision-making process.

Identification of Minority and Low-Income Populations

Census block groups were selected as the geographic unit for analysis to avoid artificially diluting or inflating the affected populations, consistent with CEQ guidance. As shown in Figure 4.2-2, the study area for direct and indirect impacts includes 12 census block groups.

Data on race, ethnicity, and poverty status were gathered from the U.S. Census Bureau's 2009–2013 ACS for the census block groups in the study area. For comparison purposes, data for the City of

Longview and Cowlitz County were also compiled. Based on census data and CEQ guidance, potential minority and low-income populations were identified as follows.

- **Minority populations.** CEQ guidance defines minorities to include American Indians or Alaskan Natives, Asian and Pacific Islanders, African Americans or Black persons, and Hispanic persons. This analysis also considers minority populations to include persons who identified themselves as being either “some other race” or “two or more races” in the 2009–2013 ACS. Following CEQ guidance, minority populations were identified where either 1) the minority population of the affected area exceeds 50%; or 2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate comparison unit of geographic analysis (Council on Environmental Quality 1997). For the purposes of this analysis, *meaningfully greater* is interpreted as *at least 50% greater*. This analysis used Cowlitz County as the primary comparison area. In Cowlitz County, the minority population in the 2009–2013 ACS was 14.6% of the total population. Therefore, this analysis considers any study area block group with a minority population of greater than 21.9% to be a minority community.
- **Low-income populations.** This study defines low-income populations as the percent of individuals living below the poverty level in each census block group, as presented in the 2009–2013 ACS. CEQ guidance does not specify a threshold for identifying clusters of low-income populations. Therefore, for this analysis, any census block group with a percentage of low-income population at least 50% greater than the percentage in Cowlitz County as a whole was considered a low-income community. In Cowlitz County, the low-income population (the population with incomes below the poverty level) is approximately 17.6% of the total population. Therefore, this assessment identifies low-income communities as those in which the census block group population living below the poverty level exceeds 26.4%.

Identification of Potential Disproportionately High and Adverse Effects

The determination of the potential to result in disproportionately high and adverse effects involved the following considerations.

- If the adverse project impact is considered significant.
- If the impacts on minority or low-income populations would appreciably exceed, or would be likely to appreciably exceed, the risk or rate to the general population.
- If the minority or low-income population would be affected by cumulative or multiple adverse exposures from environmental hazards.²

In making this determination following CEQ guidance, it was recognized effects on minority or low-income populations may be different from effects on the general population (e.g., due to a community’s distinct cultural practices, such as a pattern of living relying on subsistence fish, vegetation, or wildlife consumption). The determination of disproportionately high and adverse effects also considered proposed mitigation measures and offsetting benefits.

All resource sections in Chapters 4, 5, and 6 present the potential impacts resulting from construction and operation of the proposed export terminal. These impacts were evaluated for their

² According to CEQ guidance, the term “environmental hazard” means a chemical, biological, physical, or radiological agent, situation, or source having the potential for deleterious effects to the environment and/or human health.

potential to result in disproportionately high and adverse effects on minority and low-income communities in the *NEPA Social and Community Resources Technical Report* (ICF International and BergerABAM 2016). A summary of the evaluation is provided in Section 4.2.5, *Impacts*.

As discussed in the *NEPA Social and Community Resources Technical Report*, the assessment of disproportionately high and adverse effects on minority and low-income communities focused on potential impacts on minority and low-income populations, including impacts related to aesthetics; cultural resources; tribal resources; fish; geology and soils; groundwater; noise and vibration; and vehicle transportation. In other resource areas, the proposed export terminal would not result in adverse impacts or would result in low or minor impacts that would be avoided or minimized with standard best management practices or other mitigation measures. Based on the analysis presented in the *NEPA Social and Community Resources Technical Report*, the proposed export terminal would not have the potential to result in disproportionately high and adverse effects on minority and low-income populations in these resource areas.

4.2.4 Affected Environment

This section describes the environment in the study areas related to social and community resources potentially affected by construction and operation of the proposed export terminal. Given the proximity of the two project areas, the conditions described below generally apply to both the On-Site Alternative and the Off-Site Alternative; distinctions between the two alternatives are noted in the text where necessary.

4.2.4.1 Social and Community Cohesion and Public Services

This section describes social and community cohesion in terms of population, the various public services and social institutions serving the community, and the access and linkages between the community and those services.

The direct impacts study area (project area and within 0.5 mile of the project area) for the On-Site Alternative is characterized by predominantly industrial and transportation/utility land uses, along with limited residential uses to the north of Mount Solo Road. The area east of the project area is part of a wide corridor of industrial land uses along the Columbia River. Notable uses include the Weyerhaeuser Company lumber products manufacturing site/North Pacific Paper Corporation (NORPAC) facility and Mint Farm Industrial Park. The area west of the project area is Barlow Point, which includes an undeveloped parcel owned by the Port of Longview (the Off-Site Alternative project area), the closed Mount Solo Landfill, and large-lot residential and agricultural land uses south of Industrial Way. Neighborhoods in the direct impacts study area include Barlow Point, Memorial Park, and Mint Farm (City of Longview 2007).

The indirect impacts study area along the Reynolds Lead and BNSF Spur (within 0.5 mile of these rail lines) includes the Highlands neighborhood and the Industrial and California Way neighborhood in Longview. The Highlands neighborhood is predominantly residential. The Industrial and California Way neighborhood includes a mix of commercial and industrial uses.

Population Characteristics

Key population characteristics, including local population and population projections, are summarized below. The *NEPA Social and Community Resources Technical Report* provides a full discussion of population characteristics, including local population, population projections, age

distribution, households, family composition, race and ethnicity, limited English proficiency, disability status, median household income and poverty status, and housing characteristics.

Table 4.2-2 presents the population for the direct impacts study area, Longview, and Cowlitz County in 2000, 2010, and 2013. The population of the study area has declined by approximately 3% since 2000. In comparison, the populations of both Longview and Cowlitz County grew from 2000 to 2010 and remained flat from 2010 to 2013. Census Tract and Block Groups are shown in Figure 4.2-3.

Table 4.2-2. Population Estimates for Years 2000, 2010, and 2013

Area	Population 2000	Population 2010	Percent (%) Change 2000–2010	Population 2013	Percent (%) Change 2010–2013
Direct Impacts Study Area (Project Area and within 0.5 mile of the Project Area)					
Census Tract 3 Block Group 1 ^a	868	509	-41.4	570	12.0
Census Tract 7.03 Block Group 1 ^b	1,367	1,601	--	1,373	-14.2
Census Tract 19 Block Group 1	827	956	15.6	1,021	6.8
	3,062	3,066	0.1	2,964	-3.3
Longview	34,660	36,648	5.7	36,656	0.0
Cowlitz County	92,948	102,410	10.2	102,110	-0.3

Notes:

^a The drop in population in this census tract is largely due to the displacement of mobile home units from 2000 to 2010. In particular, the 166-space River City RV and Mobile Home Park, located near the corner of California Way and 7th Avenue, closed in 2009 for the development of a Super Walmart.

^b Census Tract 7.03 Block Group 1 applies to demographic data for 2010 and 2013. In the 2000 Census, this area is closely approximated by Census Tract 7.01 Block Group 4. The 2000 Census data are presented for informational purposes, but a percent change is not presented because the geographic areas are not identical.

Source: U.S. Census Bureau 2000, U.S. Census Bureau 2010, U.S. Census Bureau 2013.

Table 4.2-3 shows Cowlitz County population projections to 2040 (Washington State Office of Financial Management 2012). The population of Cowlitz County is projected to grow by approximately 6% from 2010 to 2020. Lower growth rates are estimated from 2020 to 2040. Over the coming decades, it is projected the age distribution in Cowlitz County will shift, with an increase in the elderly population (age 65 and over) and a decrease in the school-age population (age 0 to 17) (Cowlitz County 2015). It is also expected the proportion of the population with a disability will increase as the share of elderly population increases.

Table 4.2-3. Cowlitz County Population Projections to 2040

Area	Population 2010	Population 2020	Population 2030	Population 2040	Percent (%) Change 2010–2040
Cowlitz County	102,410	108,588	114,158	116,897	14.1
Percent Change over Previous 10 Years	--	6.0	5.1	2.4	--

Notes:

Source: Washington State Office of Financial Management 2012.

Public Services

For the purposes of this assessment, public services include educational facilities, religious institutions, social institutions, medical facilities, fire protection and emergency medical services, police services, cemeteries, public park and recreation facilities, and other notable public services and government institutions.

There are no public service facilities in the direct impacts study area for the On-Site Alternative (project area and within 0.5 mile of the project area). There are three public service facilities (a funeral home and two cemeteries) in the direct impacts study area for the Off-Site Alternative. These facilities are approximately 0.5 mile from the Off-Site Alternative project area. Table 4.2-4 illustrates the public service facilities in the indirect impacts study area (within 0.5 mile of the Reynolds Lead and BNSF Spur).

Table 4.2-4. Public Service Facilities in the Indirect Impacts Study Area

Type of Facility	Number of Facilities
Educational Facility	1
Religious Institution	3
Police Facility	1
Parks and Recreation Facility	2
Other	3
Total	10
Notes:	
See the <i>NEPA Social and Community Resources Technical Report</i> for a detailed list of public service facilities.	

Access and Linkages

A variety of roadway, pedestrian, transit, and bicycle transportation facilities provide access to and among the various public service facilities. Local roadways, Interstate 5, and state highways provide access to public service facilities.

River Cities Transit provides public transit throughout the Longview/Kelso area. The closest transit route to the project area is Route 31, which runs along 32nd Avenue, Washington Way, and Alabama Street into downtown Longview. The nearest portion of Route 31 is approximately 1 mile from the project areas. Route 33 and Route 44 both run along Ocean Beach Highway and are approximately 1 to 2 miles from the project areas. No fixed transit routes directly serve the project areas, nor do any routes cross the Reynolds Lead. Frequent and comprehensive transit service is a critical support service to residents with no access to a vehicle, especially those who are low-income, homeless, and/or reliant on public transit (River Cities Transit 2015).

Within Cowlitz County, there are various bicycle trails in parks and along certain waterfront areas. Several bicycle trails are located along the Columbia and Cowlitz rivers; however, there are no designated bicycle trails within the direct impacts study areas (0.5 mile from the project areas). Bicycle trails may provide access to public services and are discussed in more detail in the *NEPA Social and Community Resources Technical Report*.

Fire Protection and Emergency Medical Services

The Cowlitz 2 Fire & Rescue District, Longview Fire Department, and American Medical Response (AMR) provide emergency medical services and fire protection for the project areas. A brief description of each of these service providers is below; additional information on the stations, facilities, and apparatus of each is provided in the *NEPA Social and Community Resources Technical Report*.

Cowlitz 2 Fire & Rescue provides fire protection services, and serves approximately 34,000 citizens in the City of Kelso and unincorporated Cowlitz County, responding to approximately 4,100 calls per year (Cowlitz 2 Fire & Rescue 2015). The district is staffed by approximately 120 full-time and volunteer members in five active fire stations, two of which are staffed with full-time EMT and paramedic firefighters. Volunteer firefighter EMTs also respond on an on-call basis.

The Longview Fire Department serves approximately 36,000 citizens spread over 14.7 square miles of urban and suburban development. The department is staffed with 39 full-time EMT/firefighters, and 4 paramedic/firefighters. Paramedic transport service is provided within the city by AMR, a private provider. The Longview Fire Department responds to approximately 4,500 calls per year from two fire stations (City of Longview 2015).

AMR is a private ambulance company providing emergency and nonemergency medical transport service. AMR includes approximately 35 paramedics and EMTs, and handles an average of 7,500 calls annually (American Medical Response 2015). The medical transport vehicles are based out of the facility near the Cowlitz Way intersection with Long Avenue.

4.2.4.2 Local Economy

This section discusses important characteristics of the local economy, including the labor force, job inflow and outflow, unemployment, and business activity. Additional information regarding the local economy, including employment, local government revenues, and economic development activities, is provided in the *NEPA Social and Community Resources Technical Report*. For direct impacts on the local economy, the study area includes the Cities of Kelso and Longview. For indirect impacts, the study area is Cowlitz County.

Labor Force

Table 4.2-5 shows labor force data, which include the total number of people employed or seeking employment, for Longview and Cowlitz County. In 2014, Longview had a total labor force of approximately 15,019 people, which was 4.4% less than in 2004. Over the same period, the labor force in Cowlitz County overall grew by approximately 3.0%, to 44,048 people.

Table 4.2-5. Average Annual Labor Force

Area	2004	2014	Percent (%) Change
Longview	15,707	15,019	-4.4
Cowlitz County	42,763	44,048	3.0

Notes:

Data are only available for cities and towns with a population over 25,000.

Source: U.S. Bureau of Labor Statistics 2015a.

Cowlitz County Jobs

Table 4.2-6 presents data on the number of workers in Cowlitz County and where they reside, as well as the number of workers who live in Cowlitz County but work outside it. As shown, there were 31,988 employed workers in Cowlitz County in 2011. Approximately 65% lived in Cowlitz County, while 35% lived outside Cowlitz County. Of the workers not living in Cowlitz County, the highest proportions resided in Clark County to the south, Lewis County to the north, and across the river in Columbia County, Oregon. Cowlitz County employers also drew workers from larger labor pools in King County (the Seattle area) and Multnomah County (the Portland area). Approximately 20,353 workers reside in Cowlitz County but work outside of the county. Of the workers who live in Cowlitz County but are employed outside it, the highest proportions were employed in Clark County and Multnomah County to the south and King County to the north.

Table 4.2-6. 2011 Jobs Inflow and Outflow for Cowlitz County

Area	Number of Workers	Percent (%) of Total
Total Primary Jobs in Cowlitz County	31,988	100.0
Employed in Cowlitz County and Living Inside the County	20,765	64.9
Employed in Cowlitz County but Living Outside the County	11,223	35.1
Clark County, WA	3,560	11.1
Columbia County, OR	1,080	3.4
Lewis County, WA	1,073	3.4
King County, WA	657	2.1
Pierce County, WA	523	1.6
Thurston County, WA	362	1.1
Grays Harbor County, WA	339	1.1
Multnomah County, OR	359	1.1
All Other Locations	3,270	10.2
Living Inside Cowlitz County but Employed Outside the County	20,353	100.0
Clark County, WA	4,256	20.9
King County, WA	2,907	14.3
Multnomah County, OR	2,148	10.6
Pierce County, WA	1,710	8.4
Thurston County, WA	1,220	6.0
Washington County, OR	1,019	5.0
Lewis County, WA	795	3.9
Yakima County, WA	591	2.9
Clackamas County, OR	547	2.7
All Other Locations	5,160	25.4
Notes:		
Source: U.S. Census Bureau 2015.		

Unemployment

Table 4.2-7 presents unemployment numbers and rates in Longview and Cowlitz County. In 2014, there were 1,278 and 3,697 unemployed people in Longview and Cowlitz County, respectively, representing approximately 8.5 and 8.4% of the communities' respective labor forces. In contrast, in December 2014, the unemployment rate in Washington was 6.3%, and the rate for in the nation as a whole was 5.6% (U.S. Bureau of Labor Statistics 2015a, 2015b).

Table 4.2-7. Unemployment Rates for the City of Longview and Cowlitz County

Area	Unemployed Population		Unemployment Rate	
	2004	2014	2004	2014
Longview	1,395	1,278	8.9%	8.5%
Cowlitz County	3,705	3,697	8.7%	8.4%
Washington State	187,334	223,295	5.8%	6.3%
United States	7,934,000	8,704,000	5.4%	5.6%

Notes:

Data are available only for cities and towns with a population over 25,000.

Source: U.S. Bureau of Labor Statistics 2015a.

Business Activity

Business activity near the On-Site Alternative project area includes a mix of industrial and commercial uses. The 550-acre Weyerhaeuser Company lumber products manufacturing site/NORPAC facility is located upriver (southeast) of the project area along the Columbia River. This manufacturing facility produces liquid packaging board, newsprint, and other specialty papers and includes open-air storage of lumber (Weyerhaeuser 2014a, 2014b). The Mint Farm Industrial Park, a partially developed 445-acre industrial site operated as a public-private partnership between Longview and the Weyerhaeuser Real Estate Development Company, is located across Industrial Way from the On-Site Alternative project area. Current tenants include Epson Toyocom (manufacturer of quartz devices), Flexible Foam Products (manufacturer of polyurethane foam and carpet cushion), Northwest Renewables LLC (a proposed biomass energy facility), and the Mint Farm Energy Center (a natural gas energy plant) (The Mint Farm 2014).

The nearest business to the Off-Site Alternative project area is the existing bulk product terminal located adjacent to the On-Site Alternative project area in the Applicant's leased area. Many commercial and industrial businesses are within the indirect impacts study area. This study area passes through several Columbia River ports—including the ports of Longview, Kalama, and Woodland—containing numerous industrial and marine-related businesses. The study area also passes through several urban areas containing a mix of industrial, commercial, and residential land uses.

4.2.4.3 Utilities

This section describes existing utility services provided to the project area. This assessment focuses on water utilities, including potable water and wastewater service, and electrical utilities. Electricity and natural gas consumption are addressed in Section 4.7, *Energy*. For direct impacts on utilities, the study area is the project area and the area within 0.5 mile of the project area. For indirect impacts on utilities, the study area is the area within 0.5 mile of the project area.

An existing sewage treatment system provides sewer service to the On-Site Alternative project area. An existing on-site industrial wastewater treatment facility and stormwater/wastewater collection and treatment system provides wastewater treatment. The Applicant replaced the sanitary sewer collection and treatment systems with a new collection system and connection to the Longview sewer system (URS Corporation 2014). With the new connection, project area sewage flows are conveyed to the Three Rivers Regional Treatment Plant. This wastewater treatment plant has a design capacity of 26.0 million gallons per day (Washington State Department of Ecology 2012). From 2001 to 2009, the plant received an average wet-weather (typically the highest rate) flow of 3.04 million gallons per day (City of Kelso 2011).

The Mint Farm Regional Water Treatment Plant supplies drinking water to more than 45,000 people in the Longview area. Groundwater is tapped from wells in the Mint Farm Industrial Park, and the water plant consists of four high-capacity (4,000 gallons per minute) groundwater wells. The On-Site Alternative project area receives potable water from Longview through a connection on Industrial Way. This water is for domestic usage such as sinks and toilets in existing facilities (URS Corporation 2014).

For stormwater, the On-Site Alternative project area also includes on-site stormwater ponds providing water for dust control and other production needs. The stormwater ponds are supplemented with groundwater well withdrawals during dry periods (URS Corporation 2014).

For electricity, the On-Site Alternative project area also includes two Bonneville Power Administration (BPA) parcels. One parcel includes high-power transmission lines and the second parcel includes a power substation with an access road.

The Off-Site Alternative project area does not have existing connections to sewer and potable water utility service. The Port of Longview is currently engaged in an ongoing planning effort for the project area to identify its infrastructure needs.

4.2.4.4 Environmental Justice

This section describes the existing minority and low-income populations in the study areas - potentially affected by the construction and operation of the proposed export terminal. For direct impacts on minority and low-income populations, the study area is the project area and the area within approximately 1 mile of the project area. The study area for indirect impacts is the area within 0.5 mile of the Reynolds Lead and BNSF Spur.

Race, ethnicity, and poverty characteristics were compiled for the study area's block groups, Longview, and Cowlitz County as a whole.³ Table 4.2-8 provides the population, percent minority, and percent low-income for each block group in the study areas. Of the 12 census block groups in the study area, 7 have minority populations exceeding the 21.9% threshold, ranging from 23.7 to 42.4%. In addition, 6 of the census block groups have low-income populations exceeding the 26.4% threshold, ranging from 31.4 to 57.6%. The *NEPA Social and Community Resources Technical Report* provides detailed data on race, ethnicity, and poverty status for the study area. Overall, 8 of the study area's 12 block groups are considered minority and/or low-income communities for the purposes of this analysis. The remaining 4 block groups are not considered minority or low-income

³ Except for Census Tract 6.01 Block Group 4, the study areas for the On-Site Alternative and Off-Site Alternative contain the same block groups. Census Tract 6.01 Block Group 4 is within the environmental justice study area for the On-Site Alternative only; it is more than 1 mile from the Off-Site Alternative.

communities. Figure 4.2-4 shows the location of minority and low-income communities within the study area.

Table 4.2-8. Minority and Low-Income Status by Block Group

Census Block Group	2013 Total Population	Percent Minority ^a	Percent Low-Income ^a
Direct Impacts Study Area Census Block Groups (Project Area and Area within 1 Mile of the Project Area)			
Census Tract 3, Block Group 1	570	35.4	44.7
Census Tract 6.01, Block Group 3	1,025	42.4	32.0
Census Tract 6.01, Block Group 4 ^b	881	20.0	31.4
Census Tract 7.03, Block Group 1	1,373	15.1	23.7
Census Tract 7.04, Block Group 4	1,912	11.9	18.8
Census Tract 19, Block Group 1	1,021	2.0	23.5
Direct Impacts Study Area Census Block Groups^c	6,782	18.7	26.3
Indirect Impacts Study Area Census Block Groups (Within 0.5 Mile of the Reynolds Lead and BNSF Spur)			
Census Tract 5.01, Block Group 1	846	24.3	24.7
Census Tract 5.01, Block Group 2	1,047	23.7	21.2
Census Tract 5.01, Block Group 3	952	8.3	18.8
Census Tract 5.02, Block Group 1	1,587	33.1	39.6
Census Tract 5.02, Block Group 2	1,841	28.1	57.6
Census Tract 5.02, Block Group 3	1,454	26.4	44.8
Indirect Impacts Study Area Census Block Groups^d	7,727	25.4	38.2
Longview	36,656	18.4	22.6
Cowlitz County	102,110	14.6	17.6

Notes:

Shading indicates a minority and/or low-income community. The threshold for a minority community was a percent minority of at least 21.9%. The threshold for a low-income community was a percent low-income of at least 26.4%.

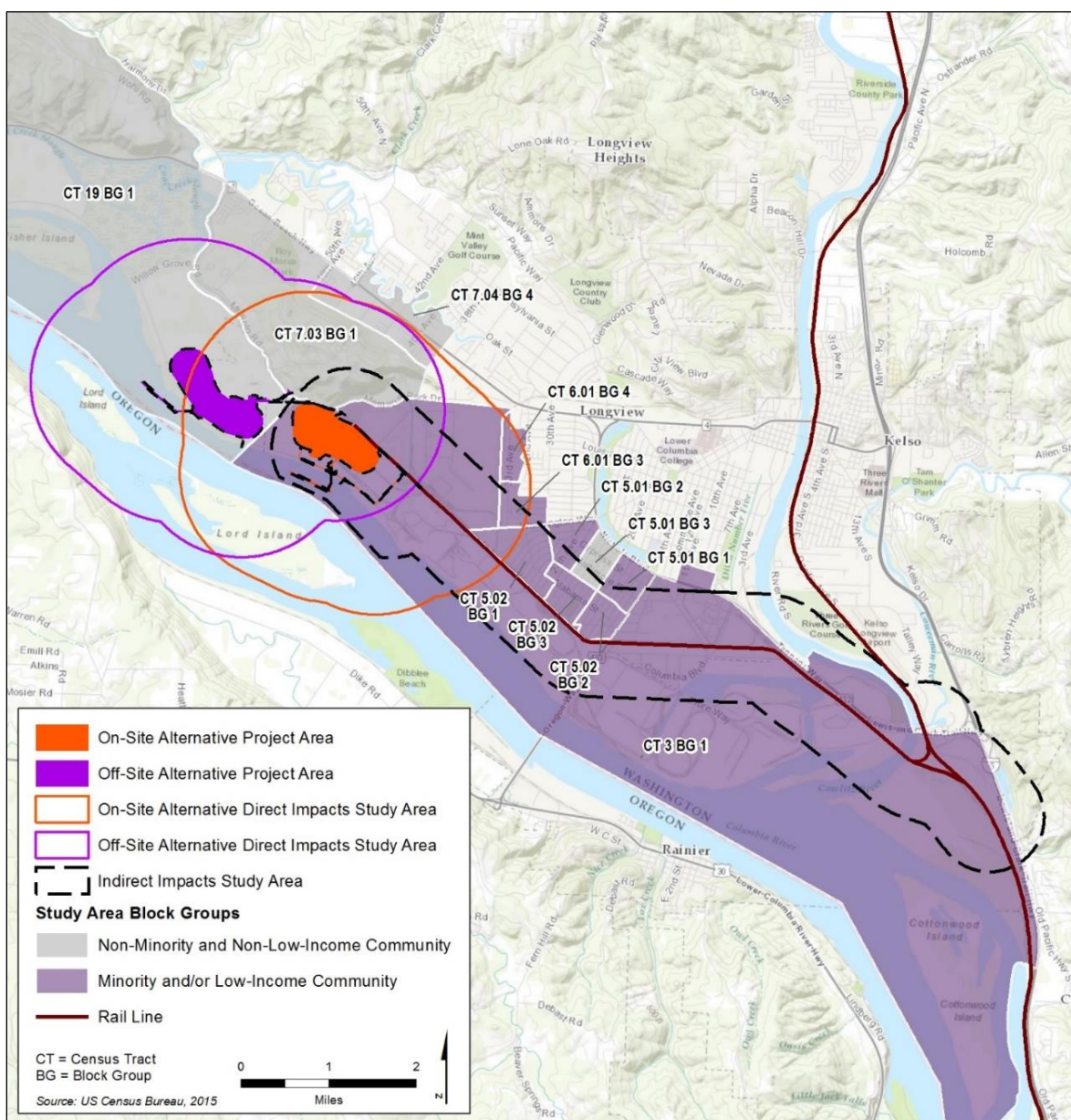
^a Minority status includes individuals defined as any race or ethnicity other than white alone and not Hispanic or Latino. Percent low-income is based on the population for whom the Census Bureau can determine poverty status. For some block groups, the population for whom poverty status is determined is slightly smaller than the total population.

^b Census Tract 6.01 Block Group 4 is within the environmental justice study area for the On-Site Alternative only; it is more than 1 mile from the Off-Site Alternative. All other block groups are within the environmental justice study areas for both alternatives.

^c Census Block Groups within 1 mile of the project areas.

^d Census Block Groups within 0.5 mile of Reynolds Lead and BNSF Spur.

Source: U.S. Census Bureau 2013.

Figure 4.2-4. Minority and Low-Income Communities

Within the direct impacts study area for the On-Site Alternative, three of six block groups are identified as minority or low-income communities.⁴ These block groups are located to the east of the project area. These block groups contain industrial uses in the areas nearest the project area. Residential uses are located approximately 1 mile or more from the On-Site Alternative project area and approximately 2 miles from the Off-Site Alternative project area. The nearest residences to the project areas (those located north of State Route 432 and along Barlow Point Road) are not located within a minority and/or low-income community. Within the indirect impacts study area, 5 of 6 block groups are identified as minority or low-income communities.

⁴ For the Off-Site Alternative, two of five block groups are minority or low-income communities. Census Tract 6.01 Block Group 4 is not within the direct impacts study area for the Off-Site Alternative.

During interviews conducted for the proposed project's public involvement plan, stakeholders expressed the Highlands neighborhood in the City of Longview warranted environmental justice consideration under Executive Order 12898. Consistent with this recommendation, this analysis identifies the Highlands neighborhood in the City of Longview as a minority and low-income community. The Highlands neighborhood corresponds with Census Tract 5.02, Block Groups 1, 2, and 3, which are shown in Figure 4.2-4.

4.2.5 Impacts

This section describes the potential direct and indirect impacts related to social and community resources from construction and operation of the proposed export terminal.

The study areas for direct and indirect impacts for each element of this social and community resources are listed below.

- **Social and Community Cohesion and Public Services.** For direct impacts, the study area is the project area and the area within 0.5 mile of the project area. For indirect impacts, the study area is the area within 0.5 mile of the Reynolds Lead and BNSF Spur.
- **Local Economy.** For direct impacts, the study area includes the Cities of Kelso and Longview. For indirect impacts, the study area is Cowlitz County.
- **Utilities.** For direct impacts, the study area is the project area and the area within 0.5 mile of the project area. For indirect impacts, the study area is the area within 0.5 mile of the project area.
- **Environmental Justice.** For direct impacts, the study area is the project area and the area within approximately 1 mile of the project area. For indirect impacts, the study area is the area within 0.5 mile of the Reynolds Lead and BNSF Spur.

4.2.5.1 On-Site Alternative

This section describes potential impacts in the study areas from construction and operation of the proposed export terminal at the On-Site Alternative location.

Construction—Direct Impacts

Construction-related activities associated with the proposed export terminal at the On-Site Alternative location would result in direct impacts as described below. As explained in Chapter 3, *Alternatives*, construction-related activities include demolishing existing structures and preparing the site, constructing the rail loop and dock, and constructing supporting infrastructure (i.e., conveyors and transfer towers).

Social and Community Cohesion and Public Services

Construction of the terminal at the On-Site Alternative location would not directly affect social and community cohesion or public services because construction activities would be limited to the project area and there are no public service facilities in the direct impacts study area.

Local Economy

Construction of the terminal at the On-Site Alternative location would result in the following direct impacts on the local economy.

Economic Output

Based on data provided by the Applicant, the terminal would generate approximately 1,350 jobs during the construction period. Construction of the terminal is expected to occur over 6 years with the peak construction activity occurring in 2018. The employees would be derived primarily from the local and regional labor pool. Assuming construction expenditures of \$600 million, the terminal would have a direct economic construction output of about \$232 million supporting about \$70 million in direct wages (Table 4.2-9).

Table 4.2-9. Direct Economic Impacts during Construction

Economic Impacts	Value
Jobs Total	1,350
Wages Total (in millions \$)	\$70
Output Total (in millions \$)	\$232
Notes:	
Source: BERK 2012	

Overall, the terminal would have a positive short-term beneficial impact on the local and regional economies.

Construction Sales and Business and Occupation Tax Revenues

Construction of the terminal would generate state and local sales and use taxes and business and occupation (B&O) taxes. Construction activities are estimated to provide a one-time construction sales tax of \$5.87 million for Cowlitz County, which represents a 5% increase of the 2012 Cowlitz County revenue of \$107.8 million (BERK 2012). The state is estimated to receive just over \$37 million in state tax revenue.

Utilities

Construction of the terminal is not anticipated to result in direct impacts on water and sewer service. Construction activities would use groundwater for dust suppression and would not affect water utility service. Construction practices would ensure the water supply and sewer connections are not disrupted for surrounding users.

BPA-Owned Parcels

As described in Chapter 3, *Alternatives*, if the Applicant obtains easements from BPA, construction of the export terminal would affect two BPA-owned parcels in the project area.⁵ The Applicant would coordinate with BPA on potential impacts on BPA infrastructure to minimize adverse impacts.

Environmental Justice

Direct impacts resulting from construction of the terminal would be temporary and limited to the project area and the immediate vicinity (for example, construction noise directly affecting nearby residences). As discussed above, the nearest residences in minority or low-income communities in

⁵ This impact would occur if BPA grants an easement to the Applicant prior to construction of the On-Site Alternative. The impact would not occur if BPA sells the land to the Applicant prior to construction.

the direct impacts study area are located approximately 1 mile from the project area. Because of the distance between the project area and identified minority and low-income communities, the direct construction impacts of the terminal would not affect minority or low-income communities at a rate that would appreciably exceed the rate to the general population. Therefore, the analysis concluded the direct impacts resulting from construction of the terminal would not have a disproportionately high and adverse effect on minority and low-income communities.

Construction—Indirect Impacts

Construction of the proposed export terminal at the On-Site Alternative location would result in the following indirect impacts.

Social and Community Cohesion and Public Services

As described in Chapter 3, *Alternatives*, construction materials would be delivered to the project area by truck or rail (truck delivery scenario and rail delivery scenario). As described in Chapter 6, Section 6.3, *Vehicle Transportation*, construction activities would not adversely affect vehicle delay at grade crossings on the Reynolds Lead and BNSF Spur because average vehicle delay would not substantially change during construction, except during the peak traffic hour at two public at-grade crossings on the Reynolds Lead under the rail delivery scenario. However, this vehicle delay impact would only occur if a project-related construction train (average of 1.3 trains per day) passes during the peak traffic hour. Therefore, construction of the terminal would have negligible impacts on social and community cohesion and access to public services.

Local Economy

Construction activity can disrupt local businesses with increased traffic, noise, dust, and other indirect impacts. Because the On-Site Alternative would have negligible vehicle delay impacts during construction, impacts on local business access would be negligible as well. As described in Chapter 6, Section 6.5, *Noise and Vibration*, delivery of construction materials by rail would increase noise levels but would not cause adverse noise impacts. As described in Chapter 6, Section 6.6, *Air Quality*, project-related construction trucks and trains would not adversely affect air quality during construction and dust from construction activities would be limited to the project area. Therefore, construction of the terminal would have negligible indirect impacts on local business activity.

Construction of the terminal at the On-Site Alternative location would have the following indirect impacts on the local economy.

Economic Output

Based on data provided by the Applicant, construction of the proposed export terminal would require approximately 1,350 direct jobs, which could generate an additional 1,300 indirect and induced local and regional jobs during construction with approximate wages of \$65 million and an additional economic output of \$203 million (Table 4.2-10) (BERK 2012). Input-output models used to estimate the impacts of total wages over multiple years provide estimates of jobs in terms of job-years. Therefore, 1,300 indirect and induced jobs resulting from construction wage expenditure over 5 years, is the equivalent of 260 job positions held for the 5-year

duration of construction.⁶ For example, if construction employment expenditures of \$70 million were to be spent uniformly over 5 years (\$14 million per year), the model indicates the equivalent of 260 positions would be created in the local economy, and could employ those people for 5 years.

Table 4.2-10. Indirect Economic Impacts during Construction

Impacts	Value
Jobs Total	1,300
Wages Total (in million \$)	\$65
Output Total (in million \$)	\$203
Notes:	
Source: BERK 2012	

Utilities

Demand for water and sewer utility services during construction of the terminal would be confined to activities in the project area. Construction would not result in new indirect demands on water supply, sewer utility services, or wastewater treatment. Therefore, construction of the terminal would not result in indirect impacts on utilities.

Environmental Justice

As noted above, the assessment of disproportionately high and adverse effects on minority and low-income communities focused on potential impacts related to aesthetics, cultural resources, geology and soils, groundwater, fish, noise and vibration, and vehicle transportation. The On-Site Alternative would not result in indirect construction impacts in any of these resource areas except vehicle transportation. Construction of the terminal would result in an indirect impact related to increased vehicle delay from construction rail traffic. The vehicle delay impacts would only occur if a project-related construction train (average of 1.3 trains per day) travels during the peak traffic hour and would be temporary (limited to the peak traffic hour during the construction period). Vehicle delay impacts would affect roadway users during the peak traffic hour, which would include minority and low-income populations as well as non-minority and non-low-income populations. Therefore, vehicle delay impacts are not likely to affect minority or low-income communities at a rate that would appreciably exceed the rate to the general population. Therefore, the analysis concluded the indirect impacts resulting from construction of the terminal would not have a disproportionately high and adverse effect on minority and low-income populations.

Operations—Direct Impacts

Operation of the proposed export terminal at the On-Site Alternative location would result in the following direct impacts.

Social and Community Cohesion and Public Services

Operation of the terminal would not divide or isolate neighborhoods because operations would be confined to the project area, nor would it lead to the displacement of substantial portions of the

⁶ The economic and fiscal impact study prepared by BERK for the On-Site Alternative used a 5-year construction duration for its assessment of economic impacts during the construction period.

existing community. Operations also would not physically displace or alter any public service facility, but it would place new demands on fire protection services, as discussed below.

Fire Protection Services

The terminal would place new demands on Cowlitz Fire & Rescue protection services. Required fire and life safety systems would be installed in the project area according to fire code standards. These systems would be regularly inspected and maintained. The Applicant would also maintain a surface water storage pond with a reserve of 0.36 million gallons for fire suppression.

Local Economy

The following direct impacts on the local economy related to operation of the terminal at the On-Site Alternative location have been identified.

Economic Output

Operation of the terminal would generate direct economic benefits based on the Applicant's expected staffing and expenditure plan. At full operation, the terminal would employ 135 people, which would include terminal administrative staff (25), waterfront staff (30), and terminal upland staff (80).

Based on data provided by the Applicant, total direct output at full buildout would be about \$49 million supporting about \$16 million in wages (BERK 2012). Unemployed and underemployed workers in the manufacturing industry could potentially fill the new jobs generated by the terminal (Table 4.2-11).

Table 4.2-11. Direct Economic Output during Operations

Impacts	Value
Jobs Total	135
Wages Total (in millions \$)	\$16
Output Total (in millions \$)	\$49
Notes:	
Source: BERK 2012	

The wage information used in this analysis provided by the Applicant relies on wage data based on the International Longshore and Warehouse Union average salaries for the entire West Coast. Wages in Cowlitz County would likely be lower than the West Coast averages used in the economic impact analysis and overall economic impacts would also be lower. For instance, the economic impact analysis assumed direct wages of approximately \$118,000 per employee, exclusive of benefits. This is not representative of actual wages likely at the terminal and likely overstates the economic output.

For comparison, the average annual wage for workers in transportation and material moving occupations, which would be similar to the type of occupational employment created by the terminal, was \$38,730 in Cowlitz County in 2014 according to the U.S. Bureau of Labor Statistics State Occupational Employment and Wage Estimates for Washington State. Wages reported in

the State Occupational Employment and Wage Estimates do not include employer costs for benefits.

Tax Revenues

Operation of the terminal would generate property taxes, combined state and local sales and use taxes, and B&O taxes. The greatest share of state, county, and special purpose district taxes would be generated by property taxes. Operation of the terminal is estimated to generate an annual average of \$1.65 million in Cowlitz County revenue and a 30-year present value of \$32.37 million in tax revenues. At the state level, operation of the terminal is estimated to generate an annual average of \$2.18 million and a 30-year present value of \$41.77 million in tax revenues. County taxes are shared with cities, allocated on the basis of population. Local taxes have historically been spent primarily on schools, roads, and emergency services, all of which have the potential for direct or indirect positive impacts on public health and safety.

A more detailed discussion of potential tax revenues from operation of the terminal is provided in the *NEPA Social and Community Resources Technical Report*.

Utilities

Operation of the terminal at the On-Site Alternative location would result in the following direct impacts.

BPA-Owned Parcels

As described in *Chapter 3, Alternatives*, if the Applicant obtains an easement from BPA, operation of the terminal at the On-Site Alternative location would be located on two BPA-owned parcels within the project area. The Applicant would coordinate with BPA to minimize adverse impacts.⁷

Sanitary Sewage Flows

As described in Section 4.2.4.3, *Utilities*, the sanitary sewer collection and treatment system serving the project area and the Applicant's leased area has been permitted and replaced with a new collection system and connection to the Longview sewer system. A new sanitary sewer conveyance system and connection to the Longview sewer system would be developed. New sanitary sewer flows from the On-Site Alternative location would be small. The Three Rivers Wastewater Treatment Plant has sufficient capacity to treat additional wastewater flows generated by the terminal. The Applicant would be required to obtain a permit to discharge wastewater, as described in Section 4.2.6, *Required Permits*.

The On-Site Alternative would not convey industrial process wastewater to the Longview sewer system or the Three Rivers Wastewater Treatment Plant. Industrial process wastewater would be treated in the on-site water treatment facility, used on site, and would not add new demands to public sewer and wastewater utilities.

⁷ This impact would occur if BPA grants an easement to the Applicant prior to construction of the On-Site Alternative. The impact would not occur if BPA sells the land to the Applicant prior to construction.

Water Demand

The terminal would use potable municipal water supplies for domestic uses such as drinking, sinks, and toilets, but would not use potable water supplies for industrial needs. Therefore, the On-Site Alternative would result in a small increase in demand for potable water.

Non-potable water would be used for industrial processes such as dust control, stockpile sprays, wash down, clean up, and fire protection. This water would be supplied by treated water from the proposed water management system and storage ponds and supplemented by wells during dry seasons. Therefore, the industrial water use would not place substantial new demands on the Longview water supply.

Environmental Justice

Direct impacts resulting from operation of the terminal would be limited to the project area and the immediate vicinity (for example, operational noise directly affecting adjacent residences). As discussed above, the nearest residences in minority or low-income communities within the direct impacts study area are located approximately 1 mile from the project area. Because of the distance between the project area and identified minority and low-income communities, the direct impacts of the On-Site Alternative during operations would not likely have the potential to affect minority or low-income communities at a rate that would appreciably exceed the rate to the general population. Therefore, the analysis concluded the direct impacts resulting from operation of the terminal would not likely have a disproportionately high and adverse effect on minority and low-income populations.

Operations—Indirect Impacts

Operation of the proposed export terminal at the On-Site Alternative location would result in the following indirect impacts.

Social and Community Cohesion and Public Services

Operation of the terminal would result in the following indirect impacts on social and community cohesion, and public services.

Community Resources and Public Services

As described in Chapter 6, Section 6.3, *Vehicle Transportation*, project-related trains would not adversely impact daily average vehicle delay at public at-grade crossings on the Reynolds Lead and BNSF Spur because average vehicle delay would not change substantially. Peak traffic hour vehicle delay would also not be adversely affected if track improvements are made to the Reynolds Lead and BNSF Spur (as described in Chapter 6, Section 6.1, *Rail Transportation*)⁸ and only one project-related train travels during the peak traffic hour. Therefore, under these scenarios, accessibility to social and community resources and public services would not change substantially.

However, if two project-related trains travel during the peak traffic hour, or infrastructure improvements are not made to the Reynolds Lead and BNSF Spur (as described in Chapter 6,

⁸ The owner of the Reynolds Lead and BNSF Spur has indicated track improvements would be made, but these plans have not been submitted or permitted.

Section 6.1, *Rail Transportation*), vehicle delay would substantially change at selected public at-grade crossings along the Reynolds Lead and BNSF Spur during the peak traffic hour. (See Chapter 6, Section 6.3, *Vehicle Transportation* for the identification of crossings and discussion of vehicle delay impacts.) These vehicle delay impacts would be temporary (limited to the peak traffic hour), and the probability for two trains to pass during the peak vehicle traffic hour would be low. Under these scenarios, project-related trains would adversely affect the accessibility to community resources and public services at selected public at-grade crossings on the Reynolds Lead and BNSF Spur.

Noise Levels

Project-related trains would increase rail traffic-related noise levels in Archie Anderson Park, along the Highlands Trail, and in Gerhart Gardens Park, all of which are located within 1,000 feet of the Reynolds Lead or BNSF Spur. Increased noise levels could reduce the attractiveness of the features in these parks that are more sensitive to increased noise levels, such as picnic facilities and sitting areas. Archie Anderson Park, the Highlands Trail, and Gerhart Gardens also include features not particularly sensitive to increased noise levels (e.g., facilities used for sports, exercise, or active play), such as walking and running trails, baseball fields, and basketball courts.

Increased noise levels would occur because project-related trains would be required to sound their horns for public safety at grade crossings per Federal Railroad Administration (FRA) regulations.

Local Economy

The following direct impacts on the local economy related to operation of the terminal at the On-Site Alternative location have been identified.

Economic Output

The terminal would result in economic and fiscal benefits to the local area, Cowlitz County, and Washington. There would be benefits beyond the project area because the terminal would support ship networks operating on the Columbia River and rail networks in Washington State.

As illustrated in Table 4.2-12, operation of the terminal would generate approximately 135 jobs. Based on data provided by the Applicant, these jobs would generate an additional 165 indirect and induced local and regional jobs with approximate wages of \$9 million and total economic output of \$21 million.

Table 4.2-12. Indirect and Induced Economic Output during Operations

Operations Impact (Full Buildout)	Value
Indirect and Induced Total ^a	165
Wages Total (in millions \$)	\$9
Output Total (in millions \$)	\$21
Notes:	
^a Indirect and induced jobs, wages, and total output were calculated using estimated multipliers from the Washington State Input-Output model.	
Source: BERK 2012	

Local Business Activity

The previous section describes how project-related trains would affect vehicle delay at at-grade crossings on the Reynolds Lead and BNSF Spur. This vehicle delay could affect accessibility to local businesses during the peak traffic hour without track infrastructure improvements to the Reynolds Lead and BNSF Spur, or if two project-related trains travel during the peak traffic hour. As described in Chapter 6, Section 6.5, *Noise and Vibration*, project-related trains would increase noise levels but would not cause adverse noise impacts on businesses because the applicable noise criteria only applies to noise-sensitive land uses, such as residences. As described in Chapter 6, Section 6.6, *Air Quality*, project-related trains would not adversely affect air quality during operations. Therefore, the terminal would have negligible indirect impacts on local business activity. Overall, increased vehicle delay from project-related rail traffic would be unlikely to affect business activities substantially, especially if the planned track improvements to the Reynolds Lead and BNSF Spur are implemented, as described in Chapter 6, Section 6.1, *Rail Transportation*.

Utilities

The terminal at the On-Site Alternative location would not result in indirect impacts on water and sewer utilities because demand for these utilities would be limited to the project area.

Environmental Justice

The terminal's indirect impacts during operations were evaluated for their potential to result in disproportionately high and adverse effects on minority and low-income communities in the *NEPA Social and Community Resources Technical Report*. Except for the impact related to horn noise from project-related trains on the Reynolds Lead during operations, the assessment concluded the terminal's indirect impacts would not affect minority or low-income communities at a rate that would appreciably exceed the rate to the general population, nor would they contribute to cumulative exposures to environmental hazards. The analysis concluded horn noise from project-related trains on the Reynolds Lead during operations would have a disproportionately high and adverse effect on minority and low-income populations. Potential mitigation measures are discussed in Chapter 8, *Minimization and Mitigation*.

Indirect noise impacts would occur because project-related trains would be required to sound their horns for public safety at grade crossings per FRA regulations, and noise levels would exceed applicable criteria at adjacent land uses near four at-grade crossings on the Reynolds Lead (Chapter 6, Section 6.5, *Noise and Vibration*). Because there are minority and low-income communities adjacent to the Reynolds Lead (Figure 4.2-4),⁹ the terminal would have a disproportionately high and adverse effect on minority and low-income populations if no measures were implemented to mitigate this indirect noise impact.

4.2.5.2 Off-Site Alternative

This section describes potential impacts in the study areas from construction and operation of the terminal at the Off-Site Alternative location.

⁹ There are approximately 289 residences located in Census Tract 3 Block Group 1, Census Tract 5.02 Block Group 1, and Census Tract 5.02 Block Group 2. All of these census block groups have been identified as minority and/or low-income communities.

Construction—Direct Impacts

The Off-Site Alternative would result in the following direct impacts.

Social and Community Cohesion and Public Services

The Off-Site Alternative would not directly affect social and community cohesion or public services because construction activities would be limited to the project area. The only public service facilities in the direct impacts study area are approximately 0.5 mile from the Off-Site Alternative project area.

Local Economy

The Off-Site Alternative would result in the following direct impacts on the local economy.

Economic Output

Construction of the terminal at the Off-Site Alternative location would require the same construction labor force as the On-Site Alternative. The Off-Site Alternative would result in the same economic impacts in terms of direct jobs, wages, and economic output during construction as those described for the On-Site Alternative. The additional construction jobs provided by the Off-Site Alternative would have a positive short-term beneficial impact on the local and regional economies.

Construction Sales and Business and Occupation Tax Revenues

The Off-Site Alternative would generate similar state and local sales and use taxes and B&O taxes during construction activities as described for the On-Site Alternative. Given the location of the Off-Site Alternative is in Longview, it is expected a greater share of tax revenues would go to Longview than the On-Site Alternative.

Utilities

The Off-Site Alternative is not anticipated to result in direct impacts on water and sewer service. Construction activities would use groundwater for dust suppression and would not affect water utility service. Construction practices would ensure the water supply and sewer connections are not disrupted for surrounding users.

Environmental Justice

Direct impacts resulting from the Off-Site Alternative would be temporary and limited to the project area and the immediate vicinity (for example, construction noise directly affecting nearby residences). The nearest residences in minority or low-income communities in the direct impacts study area are located approximately 2 miles from the project area. Because of the distance between the project area and identified minority and low-income communities, the direct impacts from construction of the Off-Site Alternative would not affect minority or low-income communities at a rate that would appreciably exceed the rate to the general population. Therefore, the analysis concluded the direct impacts resulting from construction of the terminal would not have a disproportionately high and adverse effect on minority and low-income communities.

Construction—Indirect Impacts

The Off-Site Alternative would result in the following indirect impacts.

Social and Community Cohesion and Public Services

Similar to the On-Site Alternative, construction of the terminal at the Off-Site Alternative location would not adversely affect vehicle delay at grade crossings on the Reynolds Lead and BNSF Spur because average vehicle delay would not substantially change during construction, except during the peak traffic hour at two public at-grade crossings on the Reynolds Lead under the rail delivery scenario. However, this vehicle delay impact would only occur if a project-related construction train (average of 1.3 trains per day) passes during the peak traffic hour. Therefore, the Off-Site Alternative would have negligible impacts on social and community cohesion and access to public services.

Local Economy

The Off-Site Alternative would result in the same types and intensity of construction activity as the On-Site Alternative. Therefore, like the On-Site Alternative, construction of the terminal at the Off-Site Alternative location would have negligible indirect impacts on local business activity. The Off-Site Alternative would have the following indirect impacts on the local economy.

Economic Output

The Off-Site Alternative would generate the same indirect and induced local and regional jobs, wages, and economic output as the On-Site Alternative.

Utilities

Demand for water and sewer utility services during construction of the terminal at the Off-Site Alternative location would be confined to activities in the project area. The Off-Site Alternative would not result in new indirect demands on water supply, sewer utility services, or wastewater treatment. Therefore, the Off-Site Alternative would not result in indirect impacts on utilities.

Environmental Justice

As noted previously, the assessment of disproportionately high and adverse effects on minority and low-income communities focused on potential impacts related to aesthetics; tribal resources; cultural resources; fish; geology and soils; groundwater; noise and vibration; and vehicle transportation. The Off-Site Alternative would not result in indirect construction impacts in any of these resource areas except vehicle transportation. The Off-Site Alternative would result in an indirect impact related to increased vehicle delay from construction rail traffic. The vehicle delay impacts would only occur if a project-related construction train (average of 1.3 trains per day) travels during the peak traffic hour and would be temporary (limited to the peak traffic hour during the construction period). Vehicle delay impacts would affect roadway users during the peak traffic hour, which would include minority and low-income populations as well as non-minority and non-low-income populations. Therefore, vehicle delay impacts are not likely to affect minority or low-income communities at a rate that would appreciably exceed the rate to the general population. Therefore, the analysis concluded the indirect impacts resulting from construction of the Off-Site Alternative would not have a disproportionately high and adverse effect on minority and low-income populations.

Operations—Direct Impacts

Operation of the proposed export terminal at the Off-Site Alternative location would result in the following direct impacts.

Social and Community Cohesion and Public Services

Operation of the terminal would not divide or isolate neighborhoods, displace substantial portions of the existing community, or displace any public service facility. However, it would place new demands on fire protection services, as discussed below.

Fire Protection Services

The Off-Site Alternative could result in new or different demands on fire protection services; however, required fire and life safety systems would be installed in the project area according to fire code standards. These systems would be regularly inspected and maintained. The Applicant should work with the Longview Fire Department to plan for new facilities and operations.

Local Economy

The following direct impacts on the local economy related to the Off-Site Alternative have been identified.

Economic Output

The Off-Site Alternative would require the same labor force as the On-Site Alternative and is expected to generate the same economic impacts in terms of direct jobs, wages, and economic output as those described for the On-Site Alternative.

Tax Revenues

Similar to the On-Site Alternative, the Off-Site Alternative would generate property taxes, combined state and local sales and use taxes, B&O taxes, and property taxes.

Utilities

The Off-Site Alternative would directly affect water and sewer utilities. Operation of the Off-Site Alternative would result in the following direct impacts.

Sanitary Sewage Flows

A new sanitary sewer conveyance system and connection to the City of Longview sewer system would be developed for the Off-Site Alternative. New sanitary sewer flows from the Off-Site Alternative would be small and, as discussed previously, the Three Rivers Wastewater Treatment Plant has sufficient capacity to treat additional wastewater flows. The Applicant would be required to obtain a permit to discharge wastewater, as described in Section 4.2.6, *Required Permits*.

The Off-Site Alternative would not convey industrial process wastewater to the City of Longview sewer system or the Three Rivers Wastewater Treatment Plant. Industrial process wastewater would be treated in the on-site water treatment facility and would not add new demands to public sewer and wastewater utilities.

Water Demand

The Off-Site Alternative would use potable municipal water supplies for domestic uses such as drinking, sinks, and toilets but, like the On-Site Alternative, this alternative would not use potable water supplies for industrial needs. The Off-Site Alternative would result in a small increase in demand for potable water.

Non-potable water would be used for industrial processes such as dust control, stockpile sprays, wash down, clean up, and fire protection. This water would be supplied by treated water from the proposed water management system and storage ponds and supplemented by wells during dry seasons. Therefore, the industrial water use would not place substantial new demands on the City of Longview water supply.

Environmental Justice

Direct impacts resulting from the Off-Site Alternative would be limited to the project area and the immediate vicinity (for example, operational noise directly affecting adjacent residences). As discussed above, the nearest residences in minority or low-income communities within the direct impacts study area are located approximately 2 miles from the project area. Because of the distance between the project area and identified minority and low-income communities, the direct impacts of the Off-Site Alternative during operations would not likely have the potential to affect minority or low-income communities at a rate that would appreciably exceed the rate to the general population. Therefore, the analysis concluded the direct impacts resulting from operation of the Off-Site Alternative would not likely have a disproportionately high and adverse effect on minority and low-income populations.

Operations—Indirect Impacts

The Off-Site Alternative would result in the following indirect impacts.

Social and Community Cohesion and Public Services

The Off-Site Alternative would result in the following indirect impacts on social and community cohesion, and public services.

Community Resources and Public Services

The Off-Site Alternative would result in the same impacts on vehicle delay as the On-Site Alternative if 2 project-related trains travel during the peak hour, or infrastructure improvements are not made to the Reynolds Lead and BNSF Spur. Under these scenarios, the Off-Site Alternative would adversely affect the accessibility to community resources and public services at selected public at-grade crossings on the Reynolds Lead and BNSF Spur, similar to the On-Site Alternative.

Noise Levels

The Off-Site Alternative would result in the same increases in rail traffic-related noise along the Reynolds Lead and BNSF Spur due to sounding train horns, and the same increases in noise in Archie Anderson Park, along the Highlands Trail, and in Gerhart Gardens Park as the On-Site Alternative.

Local Economy

The following indirect impacts on the local economy related to the Off-Site Alternative have been identified.

Economic Output

The Off-Site Alternative would generate the same indirect impacts and induced jobs, wages, and economic output as the On-Site Alternative. The Off-Site Alternative would result in economic and fiscal benefits to the local area, Cowlitz County, and Washington. There would be benefits beyond the project area because the terminal would support ship networks operating on the Columbia River and rail networks in Washington State.

Local Business Activity

As with the On-Site Alternative, the Off-Site Alternative would have negligible indirect impacts on local business activity. The Off-Site Alternative would not have adverse noise or air quality impacts on businesses. Increased vehicle delay from project-related rail traffic would be unlikely to affect business activities substantially, especially if the planned track improvements to the Reynolds Lead and BNSF Spur are implemented, as described in Chapter 6, Section 6.1, *Rail Transportation*.

Utilities

The Off-Site Alternative would not result in indirect impacts on water and sewer utilities because demand for these utilities would be limited to the project area.

Environmental Justice

The Off-Site Alternative's indirect impacts during operations were evaluated for their potential to result in disproportionately high and adverse effects on minority and low-income communities in the *NEPA Social and Community Resources Technical Report*. Except for the impact related to horn noise from project-related trains on the Reynolds Lead during operations, the assessment concluded the Off-Site Alternative's indirect impacts would not affect minority or low-income communities at a rate that would appreciably exceed the rate to the general population, nor would they contribute to cumulative exposures to environmental hazards. The analysis concluded horn noise from project-related trains on the Reynolds Lead during operations would have a disproportionately high and adverse effect on minority and low-income populations. Potential mitigation measures are discussed in Chapter 8, *Minimization and Mitigation*.

Indirect noise impacts would occur because project-related trains would be required to sound their horns for public safety at grade crossings per FRA regulations, and noise levels would exceed applicable criteria at adjacent land uses near four at-grade crossings on the Reynolds Lead (Chapter 6, Section 6.5, *Noise and Vibration*). Because there are minority and low-income communities adjacent to the Reynolds Lead (Figure 4.2-4),¹⁰ the Off-Site Alternative would have a disproportionately high and adverse effect on minority and low-income populations if no measures were implemented to mitigate this indirect noise impact.

¹⁰ There are approximately 289 residences located in Census Tract 3 Block Group 1, Census Tract 5.02 Block Group 1, and Census Tract 5.02 Block Group 2. All of these census block groups have been identified as minority and/or low-income communities.

4.2.5.3 No-Action Alternative

Under the No-Action Alternative, the Corps would not issue a Department of the Army permit authorizing construction and operation of the proposed export terminal. As a result, impacts resulting from constructing and operating the terminal would not occur. In addition, not constructing the terminal would likely lead to expansion of the adjacent bulk product business onto the On-Site Alternative project area. The following discussion assesses the likely consequences of the No-Action Alternative related to social and community resources.

Construction and operations would likely be limited to the project area, and therefore, would not likely result in direct impacts on social and community cohesion and public services. The No-Action Alternative could result in new jobs, which would generate additional direct, indirect, and induced wages and economic output. The No-Action Alternative would also generate tax revenue to the county and state. However, it is possible the No-Action Alternative could result in fewer new jobs and correspondingly lower new wages, output, and tax revenue than the proposed export terminal. The No-Action Alternative likely would not result in direct impacts on water and sewer service but could result in new sanitary sewage flows and new water demand.

Under the scenario evaluated for the No-Action Alternative, approximately 2 additional trains per day would use the Reynolds Lead and BNSF Spur. Noise levels from rail traffic would be higher than under existing conditions. Effects on other environmental resource areas under the No-Action Alternative would likely be similar to or less than impacts under the On-Site Alternative. Therefore, the No-Action Alternative likely would not have disproportionately high and adverse effects on minority and low-income populations.

4.2.6 Required Permits

For either proposed export terminal location, the following required permits are expected to reduce impacts on social and community services.

- **Wastewater Discharge Permit—Three Rivers Regional Wastewater Authority.** A permit would be required to discharge wastewater to the Three River Regional Wastewater Treatment Plant.
- **Utility Service Permit—City of Longview.** A permit would be required for the terminal to receive water and wastewater services from the City of Longview.

4.2.7 Public Outreach and Participation Process

The U. S. Army Corps of Engineers (Corps) implemented a public outreach effort to encourage full public participation in the EIS process. A primary component of this effort is providing two NEPA-required formal comment periods: 1) the scoping phase comment period, and 2) the comment period following public issuance of the Draft EIS. A public involvement plan developed for the environmental review process guided the public outreach effort.

Population demographics regarding minority status and limited English proficiency also informed the public outreach effort. Table 4.2-13 shows the percentage of the population over age 5 with limited English proficiency in the social and community cohesion direct impacts study area, Longview, and Cowlitz County. In all three areas, a low percentage of the population over age 5 has

limited English proficiency; approximately 3% of the population of the direct impacts study area, the City of Longview, and Cowlitz County have limited English proficiency.

Table 4.2-13. 2013 Limited English Proficiency

Area	Population Age 5 and Over	Population Age 5 and Over with Limited English Proficiency^a	Percentage Population with Limited English Proficiency^a
Social and Community Cohesion Direct Impacts Study Area ^b	2,754	90	3.3
Longview	34,354	1,194	3.5
Cowlitz County	95,579	2,939	3.1

Note:

^a Limited English proficiency includes individuals who speak English less than very well (i.e., those identified as speaking English “well,” “not well,” or “not at all” in Census data).

^b The project area and within 0.5 mile of the project area.

Source: U.S. Census Bureau ACS 2009–2013 5-year estimates.

Table 4.2-14 shows the minority percentage of the population in the minority and low-income direct and indirect impacts study areas, City of Longview, and Cowlitz County. As shown, both the direct and indirect impacts study areas and the City of Longview have higher percentages of minority population than Cowlitz County.

Prior to the scoping meeting, stakeholder interviews were conducted to guide planning for the scoping process. These interviews were conducted with stakeholders representing a diverse range of interests and demographics including city and county jurisdictions, environmental and conservation groups, landowner organizations, labor organizations, economic development and business organizations, port authorities, river pilots, and local community groups. A project website was also developed (www.millenniumbulkeis.gov) providing information in English and Spanish. This website serves as an information hub, a public-comment portal, and a document review and download repository throughout development of this Draft EIS. The website was promoted in news releases, ads in local media, and printed project information.

Table 4.2-14. 2013 Minority Status

Census Block Group	2013 Total Population	Percent Minority^a
Environmental Justice Direct Impacts Study Area Census Block Groups ^b	6,782	18.7
Environmental Justice Indirect Impacts Study Area Census Block Groups ^c	7,727	25.4
Longview	36,656	18.4
Cowlitz County	102,110	14.6

Notes:

^a Minority status includes individuals defined in the census as any race or ethnicity other than white alone and not Hispanic or Latino.

^b Census Block Groups within 1 mile of the project areas.

^c Census Block Groups within 0.5 mile of the Reynolds Lead and BNSF Spur.

Source: U.S. Census Bureau ACS 2009–2013 5-year estimates.

The Corps held two scoping meetings to receive NEPA-related scoping comments.

- September 17, 2013, in Longview, Washington
- October 9, 2013, in Ridgefield, Washington

The public scoping meetings were announced in various publications. Notices were published in the *Federal Register*, and the Corps also issued a press release. Display ads were placed in local newspapers where scoping meetings were held (*The Columbian* and *The Longview Daily News*). Announcements were also sent to a listserv group consisting of parties who have requested to be informed about project activities, and an informational flyer was mailed to 6,000 residents in neighborhoods near the project area, including the Highlands neighborhood in Longview. A Spanish translation of the informational flyer was also distributed.

Both scoping meetings used an open-house format to provide process information for the Draft EIS and details about the proposed project, and to receive comments on the scope of the Draft EIS. Spanish-language handouts and Spanish translation services were available at each meeting. All facilities were Americans with Disabilities Act-accessible.

The Corps will hold two public hearings to receive comments on the Draft EIS. The public hearings will be held on October 24, 2016, in Longview, Washington and October 25, 2016, in Vancouver, Washington. The public outreach program, including outreach to minority populations, low-income populations, and persons with limited English proficiency is ongoing throughout the environmental review process in accordance with applicable regulations. More information about public outreach can be found in Chapter 11, *Public Involvement and Agency Coordination*, of this Draft EIS.

4.3 Aesthetics

The aesthetic value of an area is based on the visual character and quality of the natural and human-made features of the site. It is also a function of viewers' perceptions of these features, which can vary according to how sensitive the viewer is and how much they are exposed to certain views. In a developed area, light and glare can also affect the visual landscape by detracting from the aesthetic quality and by interfering with adjacent land uses. For example, increased nighttime lighting can be a nuisance to adjacent residents if the lighting is bright enough.

This section describes the aesthetics in the study area. It then describes potential impacts on aesthetics from construction and operation of the proposed export terminal.

4.3.1 Regulatory Setting

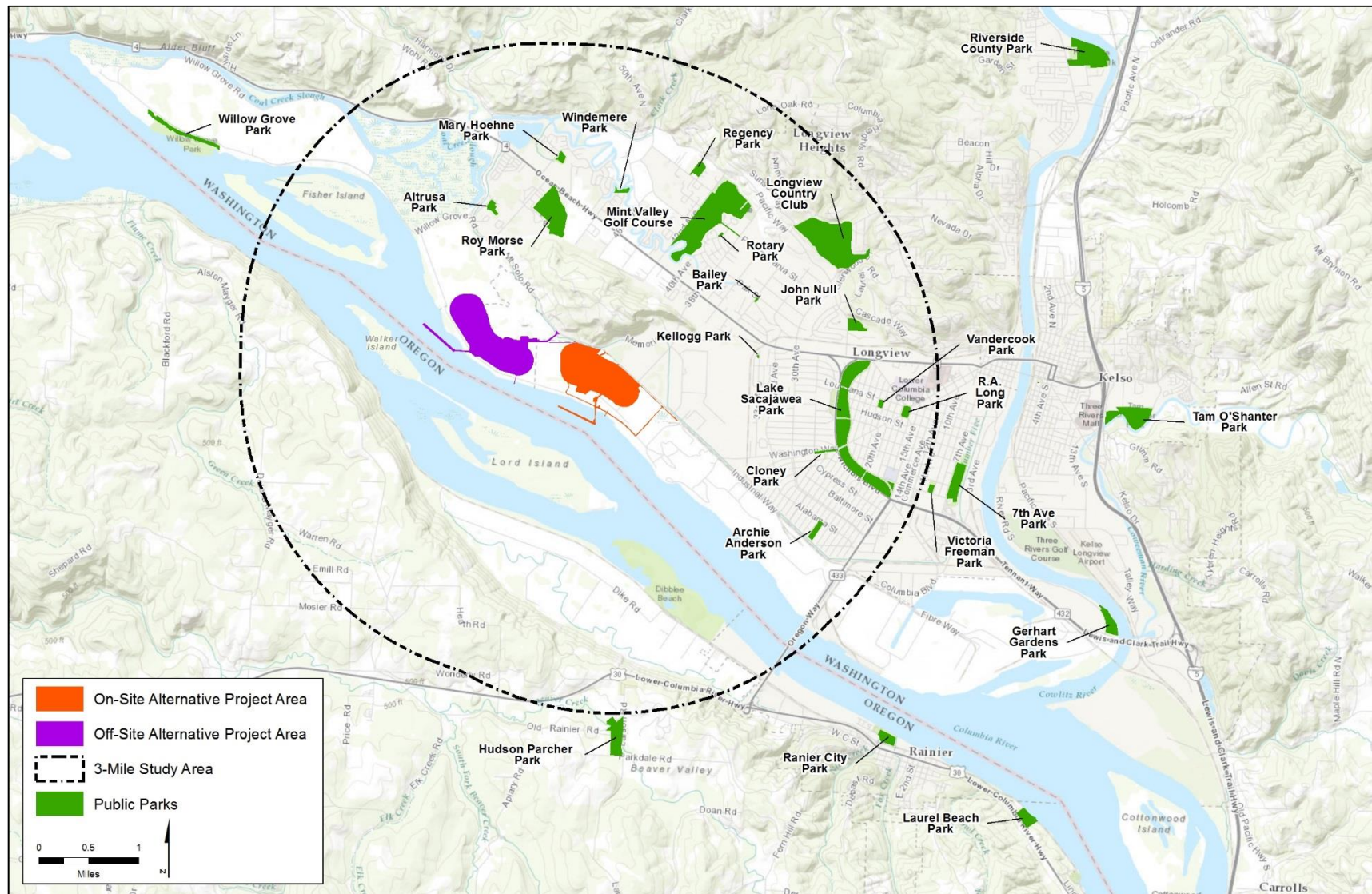
No federal, state, or local laws or regulations pertaining to aesthetics apply to the On-Site Alternative or Off-Site Alternative.

4.3.2 Study Area

The study area for aesthetics is the area within visual range of the project areas for the On-Site Alternative and Off-Site Alternative. The study area is based on Corps' *NEPA Scope of Analysis Memorandum for Record* (MFR) (2014) and adjusted to reflect the specific visual elements near the project areas. This study area encompasses ground-based locations from which the activities and structures in the project area could be observed in detail (Bureau of Land Management 1986). The proposed export terminal would be observable by viewers at ground-based locations within approximately 3 miles of the project areas. Beyond 3 miles, the terminal would blend into the visual background and be obscured by the area's topography, vegetation, and built environment. The study area is, therefore, defined as the area within a 3-mile radius of the On-Site Alternative project area (Figure 4.3-1). Given the proximity of the Off-Site Alternative project area to the On-Site Alternative project area, the same 3-mile study area is used for the Off-Site Alternative.

4.3.3 Methods

This section describes the sources of information and methods used to evaluate the potential impacts on aesthetics associated with construction and operation of the proposed terminal.

Figure 4.3-1. Study Area for Aesthetics

4.3.3.1 Information Sources

The following sources of information were used to identify the potential impacts of the proposed export terminal on aesthetics in the study areas.

- *Landscape Aesthetics, A Handbook for Scenery Management* (U.S. Forest Service 1995)
- *Visual Impact Assessment for Highway Projects* (Federal Highway Administration 1988)
- *The Visual Resource Management System* (Bureau of Land Management 1986)

Although these agency guides are tailored to fit the general types of projects falling within each agency's jurisdiction and are not directly applicable to the terminal, the visual impact assessment methods they contain were appropriate to inform the methods used in this section.

4.3.3.2 Impact Analysis

Visual impact assessments are based on evaluations of visual quality and viewer sensitivity. Viewer sensitivity is considered in the context of reasonable expectations for views of a heavily industrialized area. The following levels of impact were used to assess visual impacts.

- **High level of impact (H).** Operations, buildings, or other structures would be highly visible to a large number of sensitive viewers and would affect the visual quality of the landscape negatively.¹ Mitigation measures may or may not reduce this level of impact.
- **Moderate level of impact (M).** Operations, buildings, or other structures would be visible to a moderate number of sensitive viewers. Project elements may be generally consistent with adjacent land uses. Some mitigation may be required to reduce this level of impact.
- **Low level of impact (L).** Operations, buildings, or other structures would be minimally visible to a low number of viewers. Distance or visual compatibility with other existing land uses would make project elements difficult to perceive.
- **No impact (N).** Operations, buildings, or other structures would not be visible or would have no impact on viewers.

The following process was used to evaluate the potential impacts of the proposed export terminal for aesthetics.

1. Define the viewshed area.
2. Determine the key viewpoints of the project area.
3. Determine the types of viewers or viewer groups with views of the project area and their relative sensitivity to the changes in aesthetic conditions.
4. Prepare visual simulations of the On-Site Alternative and Off-Site Alternative.

¹ The number of sensitive viewers is relative to the total potential viewers of the project area. In this case, the total potential viewers are the residents, workers, and travelers in the 3-mile study area. A *large* number of viewers applies to viewpoints where many of the total viewers would have views of the project area. A *low* number of viewers applies to viewpoints where very few of the total viewers would have views of the project area. A *moderate* number of viewers applies to viewpoints where a number of the total viewers would have views of the project area.

The methods for each step are summarized in this section. The *NEPA Aesthetics Technical Report* (ICF International and BergerABAM 2016) provides a full discussion of each step.

Define the Viewshed

A viewshed is the area within visual range of a given viewpoint (i.e., the viewer's location) which is defined by the regional physiography, vegetation, and built environment. The viewshed from which aesthetic changes in the project area could be experienced was determined by consulting city and county maps, U.S. Geological Survey quadrangle maps, project maps, and aerial and project area photographs. These helped to show which large-scale physiographic features in the study area influence views of the project area and define the visual environment. A digital elevation model was then used to identify the viewshed of the project area for the On-Site Alternative based on topographic screening (excluding vegetation) (Figure 4.3-2). Viewpoints were selected within the viewshed. As shown in Figure 4.3-2, the viewshed encompasses most areas in the Columbia River floodplain to the west, south, and east of the project area. Views from the north are obstructed by the topography, of Mount Solo.

The viewshed determination is a screening-level assessment. It accounts only for topography in determining which locations may have views of the project area. The selection of the viewpoints themselves accounts for vegetation and the built environment.

Determine Key Viewpoints

Eleven viewpoints were identified from which views of the project areas could be altered by the On-Site Alternative and Off-Site Alternative (Figure 4.3-3).

The assessment involved verifying views at each viewpoint and using a high-resolution digital single-lens reflex camera with a 50-millimeter lens to take daytime and nighttime photographs. A sequence of photographs was taken at the height of an average viewer's eye (5 feet 5 inches above ground level) and digitally grouped together to form panoramas to approximate what the human eye would see at each viewpoint. Based on the existing land uses and environmental conditions at the viewpoints, the assessment classified views of the project area into three categories: urban and industrial, rural and residential, and natural views.

- **Urban and industrial views.** Viewers in this landscape view the project area in the context of existing urban and industrial areas.
- **Rural and residential views.** Viewers in this landscape view the project area in the context of a mixture of surrounding natural and human-made features and patterns, including land used for housing, farming, mineral extraction, or forestry.
- **Natural views.** Viewers in this landscape view the project area in the context of surrounding natural features and a largely undisturbed rural or open space setting. Few human-made developments or disturbances are present.

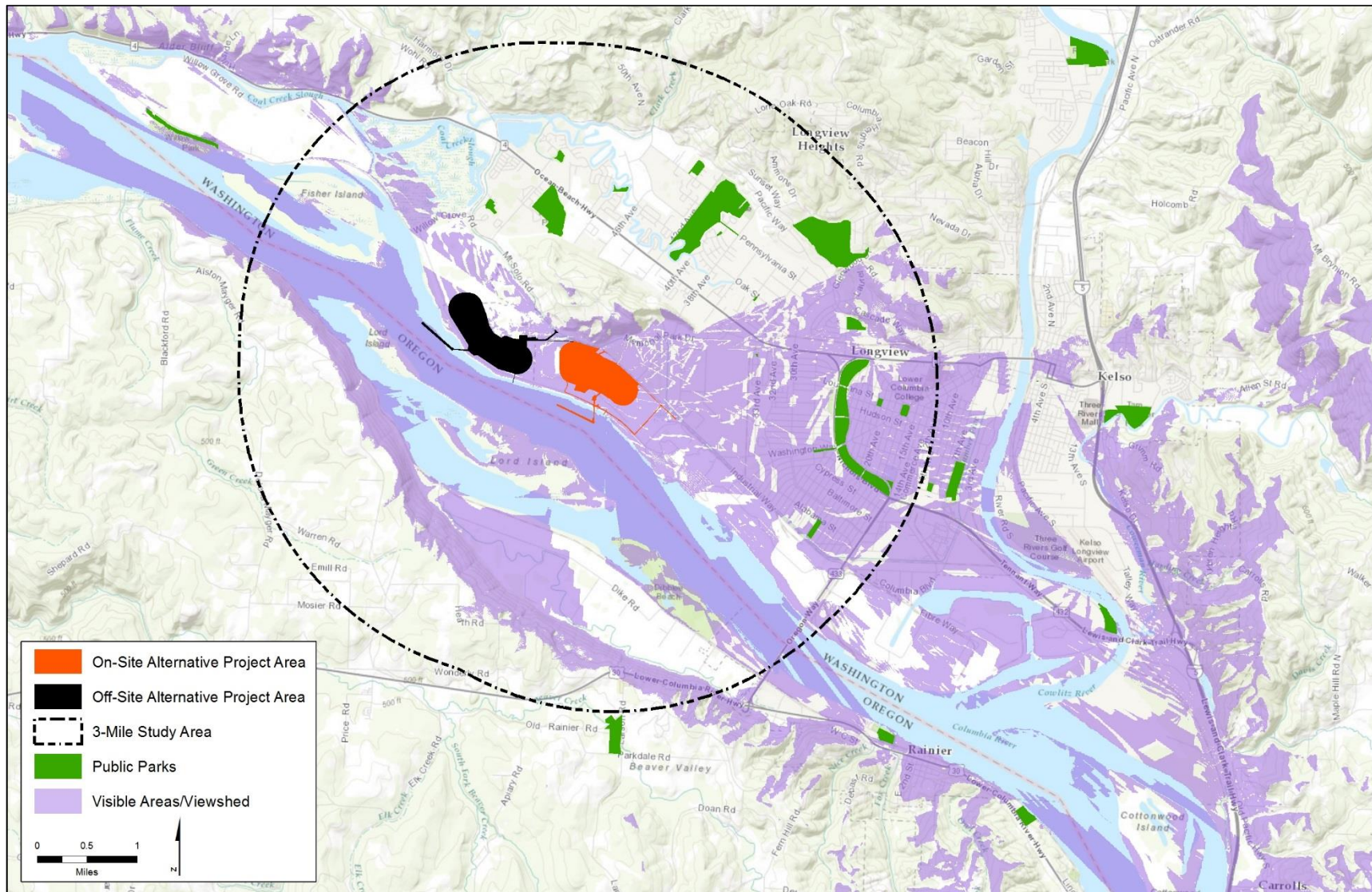
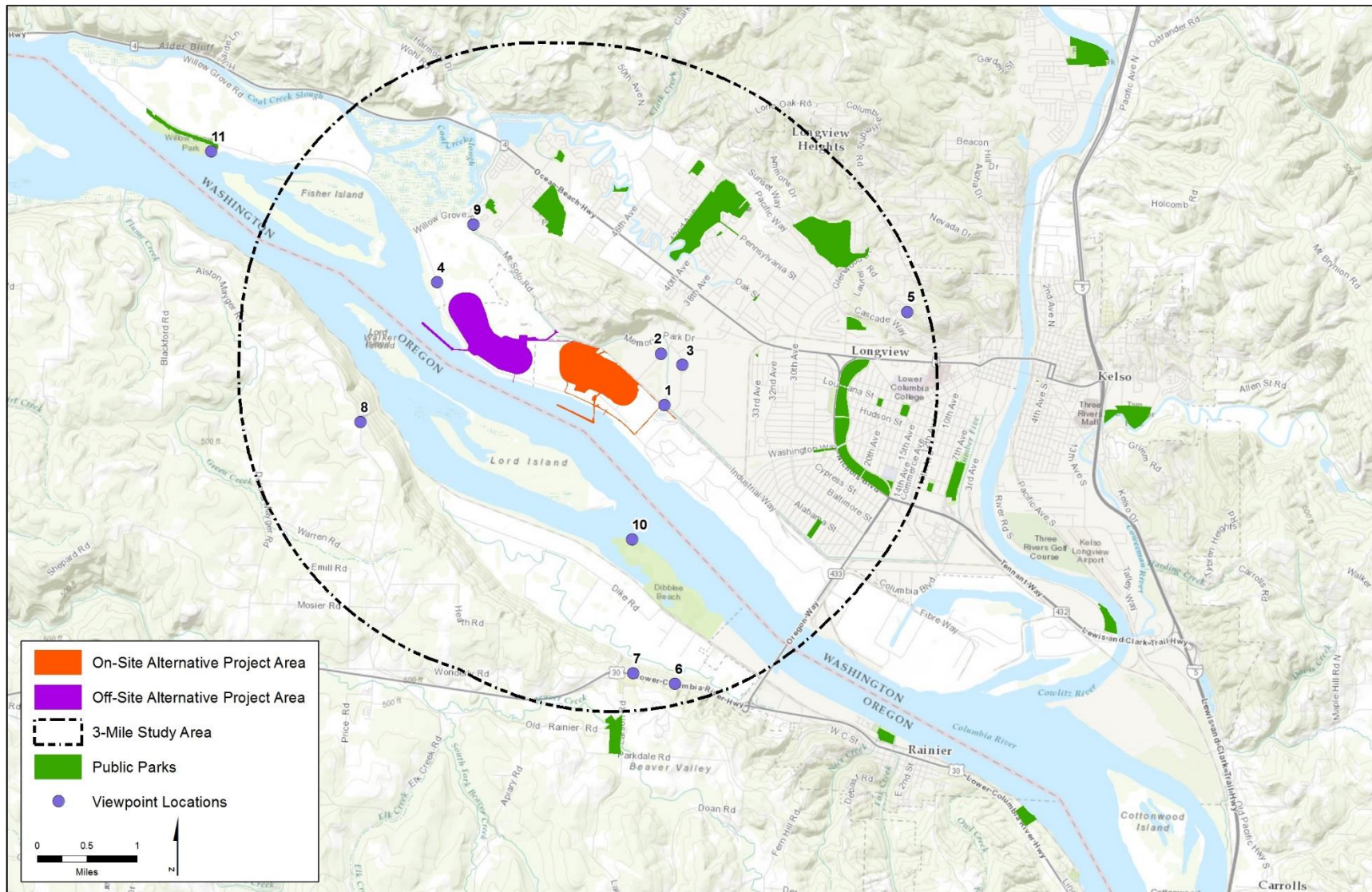
Figure 4.3-2. Viewshed Determination

Figure 4.3-3. Viewpoint Locations

Determine Viewer Groups and Viewer Sensitivity

Viewer sensitivity is the measure of the concern for visual quality and the response to changes to the elements of the natural and constructed environments the viewer experiences through sight. Viewer sensitivity is related to changes in the available views of the landscape and buildings, the construction and demolition of structures, operational equipment, and emissions.

The effects of these changes on viewers depend on the types of users, the amount of use (number of viewers and view frequency), and adjacent land uses, as described as follows.

- **Types of users.** Based on the viewpoint locations, the types of viewers who see the project area can be generally characterized as residents, workers, travelers, and recreationalists. Visual perception and sensitivity vary between types of users. Residents or recreational sightseers could be highly sensitive to any changes, while those in a work setting, such as industrial, manufacturing, or warehouse workers, could have no to low sensitivity. A working viewer's activity, awareness, and sensitivity are typically limited to the visual setting immediately outside the workplace and do not extend to surrounding views.
- **Amount of use.** Areas used by large numbers of people are considered to have a higher exposure, or sensitivity, because more viewers could be affected. Protection of visual quality usually becomes more important as the number of viewers and the duration of views increase.
- **Adjacent land uses.** Proposed changes could affect the visual quality or other aspects of adjacent land uses. The visual elements of adjacent landscapes and natural areas, buildings, structures, and operations define a visual context with which the proposed uses and facilities could be compatible or in conflict.

Prepare Visual Simulations

To assess the impacts of the proposed terminal on aesthetics, visual simulations were prepared to illustrate how it would appear if constructed. The visual simulations were developed using existing conditions photographed from each viewpoint and a three-dimensional model of the project area and surrounding area. The completed visual simulations show the visual change associated with each action alternative through "before and after" images. The visual simulation task and analysis provided the basis for the visual assessment.

4.3.4 Affected Environment

This section describes the environment in the study areas related to aesthetics potentially affected by construction and operation of the proposed terminal.

4.3.4.1 On-Site Alternative

The Applicant's leased area was originally a floodplain that supported wetland and shoreline habitats used by wildlife, birds, and people. Industrial use dates back to 1941. Today, the Applicant uses an area adjoining the project area (within the leased area) as a bulk product terminal to import, store, and transfer bulk alumina and coal. The project area includes upland facilities, a dock in the Columbia River capable of receiving Panamax-sized vessels, and rail and road connections. While most of the existing project area is developed, the undeveloped western sections consist of open grasslands, wetlands, and a small forested area in the northwest corner.

Adjacent land uses include those in the leased area as well as various other industrial, utility, transportation, commercial, and residential uses. The 550-acre Weyerhaeuser Company lumber products manufacturing facility is located east of the project area and the 478-acre Port Industrial Marine property is located upriver of the Weyerhaeuser site. Port facilities include eight marine terminals that primarily handle commodities such as bulk goods, forest products, wind energy products, steel, and heavy-lift project cargo (Port of Longview 2011). Port properties also include the recently purchased Barlow Point property, located northwest of the project area within the city limits of Longview. The Barlow Point property is currently undeveloped, but the Cowlitz County Public Utility District and Bonneville Power Administration use this and adjacent properties for high-power utility lines and a power substation. The approximately 75-foot-tall, 47-acre Mount Solo Landfill is located between the project area and the Barlow Point property. The 445-acre Mint Farm Industrial Park, another prominent adjacent industrial use, is located north of Industrial Way within city limits. Two single-family residences are also located on the north side of Industrial Way on wooded lots and set back from the street. Overall, the project area is located in a wide corridor of industrial, transportation, and utility land uses along the Columbia River.

Viewshed

The project area and most of Longview and Kelso, along with rural areas south of the Columbia River, lie in the Columbia River floodplain. The floodplain affords wide views of the Columbia River and surrounding area because of its flat topography and limited landform interruptions, and is a defining feature of the affected viewshed. The extent of the flat floodplain varies based on the proximity of hillsides to the north and south of the river. At the project area, the floodplain extends approximately 4 miles perpendicular to the river. With the exception of Mount Solo (elevation 610 feet) directly north of the project area, the elevation of the floodplain varies little across the Longview and Kelso area, ranging from approximately 5 feet to 30 feet. The hillsides north and south of the floodplain rise steeply and are generally heavily forested and in a natural condition. The natural vegetation of the floodplain is composed of riparian and lowland deciduous forest vegetation, but in most areas, depending on the level of existing development, the vegetation has been highly modified. The built environment and existing vegetation block most views of the project area across the relatively flat floodplain.

From the project area, downtown Longview is approximately 3 miles east, Kelso is approximately 5 miles east along the Cowlitz River, and Rainier, Oregon, is approximately 4 miles upriver (southeast) along the south bank of the Columbia River. These cities contain a wide range of industrial, residential, commercial, recreation, and public facility land uses.

Industrial Way, which extends along the north side of the project area, is the nearest land transportation corridor. The project area includes multiple driveway access points and a short line rail connection to the main line rail operated by BNSF Railway Company (BNSF). The Lewis and Clark Bridge (State Route 433) is located approximately 3 miles upriver from the project area.

Except for the two single-family residences across Industrial Way from the project area, most residential areas are located within Longview city limits or unincorporated Cowlitz County and are at least 1 mile away from the project area.

There are numerous recreational opportunities and sites in the broader Longview, Kelso, and Rainier urban area. The Columbia River is a prominent recreational resource and supports boating, fishing, and other forms of water recreation. In addition, two major recreational trails pass through

the study area: the 146-mile Lower Columbia River Water Trail, which extends from Bonneville Dam to the mouth of the Columbia River, and the Lewis and Clark National Historic Trail.

Cowlitz County owns 14 parks and boat launches within 10 miles of the project area and the City of Longview, which adjoins the project area, administers 33 recreational facilities including 17 public parks (URS Corporation 2014). Because of existing topography, vegetation, and urban development, none of the parks within the county and the city portions of the study area has a view of the project area. However, users of the Columbia River and Dibblee Beach in Oregon do have views of the project area. Dibblee Beach, an undeveloped recreational area, is located on the south shore of the Columbia River, directly southeast of the project area. Lord and Walker Islands are in Oregon, directly south across the Columbia River. The islands are undeveloped and have no land access, but are part of the water trail network, and are used for primitive camping (i.e., a campsite with no support facilities). Other areas in the Columbia River floodplain on the south side of the river in Oregon are primarily composed of undeveloped rural or agricultural land.

Viewer Groups and Key Viewpoints

The following sections describe viewer sensitivity and associated key viewpoints for the types of views identified: urban and industrial views, rural and residential views, and natural views. These types of views are described in more detail below. Eleven key viewpoints from which views of the On-Site Alternative project area could be affected were identified (Table 4.3-1).

Table 4.3-1. Viewpoints, Viewer Sensitivity, and Existing Visual Quality—On-Site Alternative

View-point	View	Viewer Sensitivity	Viewer Description	Type
1	Looking west on Industrial Way	Low	Industrial workers and commuters traveling on Industrial Way and other local roads. Would experience frequent views of the project area from nearby industrial areas.	Urban/ Industrial
2	Looking south along 38th Avenue	Low	Industrial workers and commuters traveling on 38th Avenue and other local roads. Would experience frequent views of the project area from nearby industrial areas.	Urban/ Industrial/ Rural
3	Looking southwest from Mint Farm Industrial Area (from Prudential Boulevard)	Low	Industrial workers and commuters traveling Prudential Boulevard and other local roads. Would likely experience frequent views of the project area from nearby industrial areas.	Urban/ Industrial/ Commercial
4	Looking east from Barlow Point Road	High	Residents and agricultural workers looking east toward the project area. Would likely experience frequent views of the project area from rural areas located within the City of Longview and unincorporated Cowlitz County. Views could be of long duration and viewers could have a high sensitivity to change.	Rural/ Residential

View-point	View	Viewer Sensitivity	Viewer Description	Type
5	Looking southwest from Hillside Residential (from Alexia Court)	High	Residents and travelers on local roads. Viewers would experience frequent dispersed views of the project area at various times of day and for long durations.	Rural/ Residential
6, 7	Looking north/northwest from US 30 viewpoints	Moderate	Highway travelers looking northwest from US 30 and scenic pullouts. Viewers would experience views of the project area for short durations. Frequency could range from infrequent for visitors to daily for commuters.	Rural
8	Looking northeast from Alston Mayger Road	Moderate/ High	Residents and travelers looking northeast from rural residential areas along this road would experience frequent dispersed views of the project area at various times and for long durations.	Rural/ Residential
9	Looking southeast from West Longview Neighborhood	None	Residents looking southeast toward the project area. Views of the project area are obstructed by Mount Solo Landfill and existing vegetation.	Rural/ Residential
10	Looking north from Dibblee Beach	High	Public beach and on-water recreationalists looking north toward the project area. Infrequent, short-duration views of the project area, but viewers could be highly aware of change. Few night viewers.	Natural
11	Looking east from Willow Grove Park and Boat Launch	None	Boaters and recreationalists looking east toward project area. Views would be obstructed by vegetation on Fisher and Hump Islands in Columbia River. Boaters traveling upriver could experience varying views of the project area.	Natural

Urban and Industrial Views

The typical viewers in this area are assumed to be industrial workers and commuters traveling on Industrial Way. Visual sensitivity in the industrial use area along the Columbia River is expected to be low because of the existing industrial character of the landscape. Existing industrial facilities appear large in scale and dominate the landscape character. Artificial lighting is common throughout the industrial area and clearly defines the extent of the heavy industrial area at night. The concentration of similar facilities and land uses can make changes in nighttime lighting difficult to discern.

Rural and Residential Views

The typical viewers in this area are presumed to be residents of the city neighborhoods or of surrounding low-density unincorporated residential properties, including areas south of the river in

Oregon. Some travelers on local and state transportation corridors, such as U.S. Route 30 (US 30) on the rural south side of the Columbia River, also have views of the project area.

The general landscape of the rural and residential area consists of natural and human-made features and patterns, often the result of an altered landscape currently supporting rural farming or forestry development. The existing large-scale industrial facilities, high-voltage electrical transmission lines, electrical substations, and plumes of industrial emissions may or may not be clearly discernible.

Individual sites and uses are more difficult to discern within the surrounding industrial landscape when viewed from longer distances. For example, a viewer at the Hillside Residential viewpoint (Viewpoint 5) is located approximately 3 miles northeast of the project area; from this view, it would be difficult to identify changes to the existing area. Industrial emission plumes and artificial lighting are common throughout the industrial area along the Columbia River. Moreover, the concentration of emissions and light sources at similar facilities and land uses in this industrial area reduces the visual distinction of any single site or facility.

Natural Views

The typical viewers in natural areas are recreationalists using the Columbia River or public parks. As noted above, the Columbia River offers a variety of recreational opportunities such as boating, fishing, and other forms of water recreation, and two recreational trails pass through the study area. Dibblee Beach offers public beach and water access, fishing, swimming, picnicking, sunbathing, hiking and bird watching. The landscape character of natural areas is formed by distinctive and memorable natural features (e.g., landforms, rock, outcrops) and patterns (vegetation and open space) with few human-made features. Visual texture consists of rough natural surfaces and colors, including browns, yellows, and greens, and the smooth waters of the Columbia River. Views for a typical recreationalist are generally infrequent and of short to moderate duration; however, viewer sensitivity tends to be high due to interest in natural areas and the inconsistency of natural and industrial lands.

In addition to being used by recreationalists, the Columbia River is also navigable by commercial boat operators. Viewers from commercial boats are expected to have a low sensitivity to visual changes because of the infrequent and transitory nature of their views; it is unlikely they would focus on changes to the project area.

Key Viewpoints

Table 4.3-1 lists the viewpoints and summarizes the levels of viewer sensitivity, and the existing visual quality of each viewpoint as they relate to the On-Site Alternative. The *NEPA Aesthetics Technical Report* provides a detailed discussion of each viewpoint. Appendix I, *Viewpoints for Aesthetics Analysis*, describes the viewpoints as they relate to the On-Site Alternative project area and show the existing views from each viewpoint.

4.3.4.2 Off-Site Alternative

The Off-Site Alternative project area is an approximately 220-acre area at Barlow Point owned primarily by the Port of Longview. Most of the project area is within the City of Longview limits, although a small portion of the project area extends onto privately owned property in unincorporated Cowlitz County. The project area, which is undeveloped and contains open land and

vegetated areas, is between the closed Mount Solo Landfill and the levee road along the north bank of the Columbia River.

Viewshed

The project area for the Off-Site Alternative is approximately 1 mile downstream of the project area for the On-Site Alternative. The general viewshed characteristics of the Off-Site Alternative project area and On-Site Alternative project area are largely the same. However, the visual quality of the Off-Site Alternative project area is different because it is undeveloped and contains open land and vegetation.

There is no access by paved roadway to the project area. Dike Road runs parallel to the project area along the Columbia River, and Barlow Point Road serves the adjacent low-density residential areas to the west. The only direct sources of nighttime light are residential homes to the north. High levels of indirect light emanate from the Longview and Kelso urban areas and the heavy industrial areas along the Columbia River to the east, including the existing activities in the project area and at the Weyerhaeuser facility and other Port of Longview facilities.

Viewer Groups and Key Viewpoints

The following section summarizes viewer sensitivity and existing visual quality of each viewpoint as it relates to the Off-Site Alternative (Table 4.3-2).

Table 4.3-2. Viewpoints, Viewer Sensitivity, and Existing Visual Quality—Off-Site Alternative

View-Point	View	Viewer Sensitivity	Viewer Description	Type
1	Looking west on Industrial Way	Low	Industrial workers and commuters travelling on Industrial Way and other local roads. Views of the project area are obstructed by existing industrial facilities and vegetation.	Urban/ Industrial
2	Looking south along 38th Avenue	Low	Industrial workers and commuters traveling on 38th Avenue and other local roads. Views of project area are obstructed by existing industrial facilities and vegetation.	Urban/ Industrial/ Rural
3	Looking southwest from Mint Farm Industrial Area (from Prudential Boulevard)	Low	Industrial workers and commuters traveling Prudential Boulevard and other local roads. Views of project area are obstructed by existing industrial facilities and vegetation.	Urban/ Industrial/ Commercial

View-Point	View	Viewer Sensitivity	Viewer Description	Type
4	Looking east from Barlow Point Road	High	Residents and agricultural workers looking east toward project area. Viewers would likely experience frequent views of area from rural areas located in unincorporated Cowlitz County. Views may be in close proximity and of long duration. Viewers will have high sensitivity to change.	Rural/ Residential
5	Looking southwest from Hillside Residential (from Alexia Court)	Low	Residents and travelers of local roads. Views of project area are obstructed by vegetation and Mount Solo.	Rural/ Residential
6,7	Looking north/northwest from US 30 viewpoints	Moderate	Highway travelers looking northwest from US 30 and scenic pullouts. Viewers would experience views of project area for short durations. Frequency may range from infrequent for visitors to daily for commuters.	Rural
8	Looking northeast from Alston-Mayger Road	High	Residents looking northeast from rural areas along this road. Viewers would experience frequent dispersed views of project area at various times and for long durations.	Rural/ Residential
9	Looking southeast from West Longview Neighborhood	High	Residents looking southeast toward project area. Viewers assumed to experience frequent views of project area at various times and for long durations.	Rural/ Residential
10	Looking north from Dibblee Beach	Low	Public beach or on-water recreationalists looking north toward project area. Primary views of project area are blocked by vegetation on Lord Island.	Natural
11	Looking east from Willow Grove Park and Boat Launch	None	Boaters and recreationalists looking east toward project area. Views are obstructed by vegetation on Fisher and Hump Islands in Columbia River. Boaters traveling upriver may experience varying views of the project area.	Natural

The existing dominant visual character of the project area is open space with stands of mature trees interspersed with industrial development. Mount Solo and the Mount Solo landfill limit direct views of the project area from the north and east. Some of the viewpoints from the east have no, or very limited, views of the project area (Viewpoints 1, 2, 3, and 5). Viewers at these locations have low sensitivity to the project area.

Conversely, this project area is more visible from the west than the project area of the On-Site Alternative. There would be direct views of the project area from the adjacent Barlow Point and

West Longview residential neighborhoods (Viewpoints 4 and 9). Residential viewers of the project area have a high sensitivity to changes in visual conditions.

Existing views from US 30 (Viewpoints 6 and 7) are of trees and open space that tend to blend with other rural and natural areas. The project area is clearly discernible from these viewpoints. Due to distance, the typical viewer at Viewpoints 6 and 7 is presumed to have moderate sensitivity to changes at the project area.

The landform and vegetation on Lord Island and Fisher Island lie between the project area and Dibblee Beach (Viewpoint 10) and the Willow Grove Boat Launch (Viewpoint 11). Views are limited or completely blocked. There is low viewer sensitivity from these locations; however, there is high sensitivity for on-water viewers.

As noted, Appendix I, *Viewpoints for Aesthetics Analysis*, shows the existing views from each viewpoint.

4.3.5 Impacts

This section describes the potential direct and indirect impacts related to aesthetics from construction and operation of the proposed export terminal.

This section describes and illustrates the impacts associated with each viewpoint for the On-Site Alternative, Off-Site Alternative, and No-Action Alternative. Impacts on the visual quality of the study area would vary depending on the location of the viewer, the sensitivity of the viewer, the duration of the view, and the operational practices at each project area.

4.3.5.1 On-Site Alternative

The following sections describe the potential aesthetic impacts attributable to the construction and operation of the terminal at the On-Site Alternative location. The levels of impact for each viewpoint are identified as high, moderate, low, and no impact, as defined in Section 4.3.3, *Methods*.

Construction—Direct Impacts

Construction-related activities associated with the On-Site Alternative could result in direct impacts as described below. As explained in Chapter 3, *Alternatives*, construction-related activities include demolishing existing structures and preparing the site, constructing the rail loop and dock, and constructing supporting infrastructure (i.e., conveyors and transfer towers).

Construction of the terminal would begin with demolishing the existing cable plant and potline buildings and ancillary structures and facilities. Demolition activities also would include the removal of approximately 6 acres of forested wetland in the northwest corner of the project area. The existing trees are directly south of Mount Solo and east of the Mount Solo landfill along Industrial Way; their removal would mainly affect travelers along Industrial Way.

Following demolition and general area preparation, the project area would be preloaded to increase the strength of the underlying project area soils to accommodate the four future coal stockpiles. A rolling preload of material would be used to improve the load-bearing capacity of the soils (i.e., one stockpile pad at a time would be preloaded). Preloading material would be placed in a pile approximately 35 feet high covering the area of the berm and adjacent stockpile pads and would be

left in place until soil consolidation is achieved. Following consolidation, preloading material would be moved to another berm and stockpile pad location, with supplementary import material added to achieve a pile approximately 35 feet high. The process would be repeated at each berm and stockpile location until soil consolidation is achieved across the entire stockpile area. Ground improvement would occur progressively and would take up to 7 years to complete. The preloading activities would be the longest phase of construction.

During construction, activities would include the use of heavy machinery such as cranes, wheel loaders, dozers, dump trucks, excavators, graders, rollers, compactors, drill rigs, pile-driving equipment, portable ready-mix batch plant, ready-mix trucks, concrete pumps, elevated work platforms, forklifts, rail track laying equipment, welders, water pumps, river dredging barges, and other related equipment. Construction would also involve construction lighting and project area safety lighting or warning flashers as well as shoreline and in-water construction activities for the proposed docks.

Construction of the terminal at the On-Site Alternative location could result in direct impacts as described below.

Visual Features

Construction activities in the project area would be visible to residents, workers, commuters, recreationalists, and boat operators, but these activities would be temporary and consistent with the general industrial context of the surrounding area. Although preloading berms could remain in place for up to 7 years, these would not be a prominent visual feature in the larger industrial waterfront. Furthermore, in this industrial context, it would be difficult for more distant viewers, particularly rural and residential viewers at Viewpoints 6, 7, and 8 (Appendix I, *Viewpoints for Aesthetics Analysis*) to perceive noticeable changes during construction. Construction of the On-Site Alternative would result in a low level of impact on visual quality.

The Applicant anticipates construction activities would occur primarily during daylight hours. Therefore, construction of the On-Site Alternative would not result in adverse impacts on aesthetics.

Construction—Indirect Impacts

Construction of the proposed export terminal at the On-Site Alternative location would not result in indirect impacts on aesthetics.

Operations—Direct Impacts

Operation of the proposed export terminal at the On-Site Alternative location would result in the following direct impacts. Operations-related activities are described in Chapter 3, *Alternatives*.

The On-Site Alternative would consist of one operating rail track, eight rail tracks for storing up to 8 unit trains, rail car unloading facilities, a stockpile area for coal storage, conveyor and reclaiming facilities, two new docks in the Columbia River (Docks 2 and 3), and shiploading facilities on the two docks. Coal would be unloaded from rail cars, stockpiled and blended, and loaded by conveyor onto ocean-going vessels at Docks 2 and 3 for export. New prominent visual features and structures would include the coal stockpiles (approximately 85 feet high), eight transfer towers, two shiploaders (80 to 90 feet high), a surge bin (approximately 146 feet high), and vessels at the docks (approximately 190 feet high for Panamax vessels). Vehicles would access the project area from

Industrial Way, and vessels would access the project area via the Columbia River and berth at one of the two new docks. Terminal operations would occur 24 hours per day, 7 days per week.

Overall, the visual quality of the On-Site Alternative would be similar to the existing surrounding industrial development. The forms, lines, colors, and scale of existing and proposed buildings and elements would be similar to nearby heavy industrial developments and the facility would be visually compatible with the surrounding industrial uses.

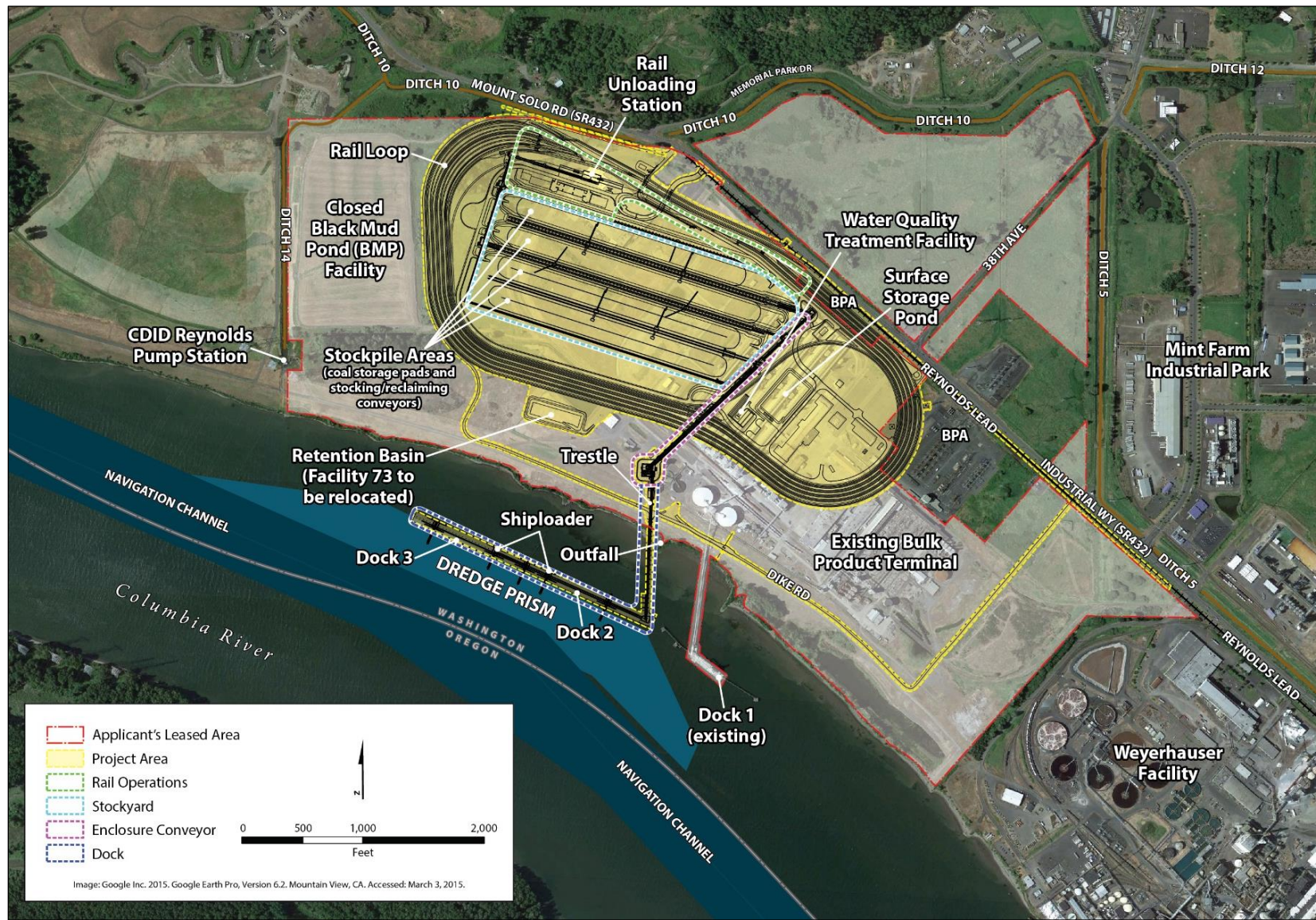
The On-Site Alternative would introduce new light sources to the project area. The new artificial light would be partially offset by removing some outdoor lighting during the demolition of existing buildings and facilities. Lighting plans are preliminary and it is expected the On-Site Alternative would require lighting ranging from low-level lighting for general area lighting (e.g., streetlights) to high-intensity, spot-level lighting (e.g., lighting on the docks at night).

- **Low-level lighting.** Low-level ambient light would be required for general area lighting. This level of lighting would be used along pedestrian and vehicular access roads, in the maintenance and storage areas, and at the water treatment and pump stations. Most ambient lights would be standard, pole-mounted streetlights (approximately 30 feet high) or structure-mounted lights. Typical access lighting in some areas, such as stairways and walkways on the stackers and reclaimers or conveyor transfer points, would be turned on with light and motion sensors as needed for operator safety. In addition, most conveyor lighting would be contained within the structures enclosing the conveyors and light spill would be limited.
- **Moderate-level lighting.** Moderate-level lighting would provide safety and operation lighting at key points such as the head or tail end of the conveyor system or indexers. Colored navigational lights on the docks and clearance lights at the top of tall structures are also considered a moderate-level light. In most instances, moderate-level lights would be directed sources.
- **High-intensity, spot-level lighting.** High-intensity, spot-level lighting would be required for vessel arrival and departure and for accessing equipment on the docks during nighttime operation. One or two vessels would be moored at the terminal at a time and would be lit with suitable working and safety lighting. Stockpiles would not be lit except for some high-intensity, directed lighting to illuminate areas where stackers and reclaimers are working during periods of low light. Stackers and reclaimers would be unmanned but monitored with cameras; this lighting would be necessary for camera visibility. Only one stacker and one or two reclaimers and the associated lighting would operate at any given time.

Table 4.3-3 summarizes the proposed operational areas and light conditions. Figure 4.3-4 identifies the operational areas discussed in the table.

Table 4.3-3. Proposed Operational Areas and Lighting

Area	Function	Level of Lighting	Type of Lighting ^a
Rail Operations			
Train arrivals and departures	Lighting for areas for crew changes, switching points, etc.	Low	Area. Mounted on 30-foot poles.
Indexer	Lighting for placement and operation of indexer and sufficient for camera to monitor safety of work and equipment use	Moderate	Directed.
Stockyard			
Berm conveyors	Lighting for personnel access along length of conveyor; more lighting at tail and head ends of conveyors	Low/ Moderate	Area.
Conveyor transfer points	Pedestrian-level lighting; higher levels around head and tail ends of conveyors	Low	Directed. Mostly within enclosed structures.
Stackers and reclaimers	Pedestrian-level stair and walkway lighting; higher levels for work areas, operational equipment, and clearance lights at top of equipment masts	Low/ Moderate / High	Directed. Illuminates stacking and reclaiming operation for camera visibility. Access lights would be motion/light- sensor controlled.
Enclosure Conveyor			
Receiving and shipping	Lighting for pedestrian access along conveyor and through gallery	Low	Directed. Access lights would be motion/light- sensor controlled.
Dock			
Conveyors	Pedestrian-level lighting along length of conveyors	Low	Area.
Conveyor transfer points	Pedestrian-level lighting; higher levels around head and tail ends of conveyors	Moderate	Directed.
Mooring, deck	Lighting for vessel arrival/departure and for dock plant and equipment	High	Directed. As required to illuminate operations and to ensure edge of dock is clearly visible.
Navigation	Clearance lighting	Moderate	Point. Shows extent and height of facilities.
General Area			
Access road	Lighting for clear identification of roadways	Low	Area. Lighting for roadways. Mounted on 30-foot poles.
Maintenance area and storage	Maintenance/services/repair lighting for work and safety	Low	Area. Lighting for roadways. Mounted on 30-foot poles.
Water treatment and pump stations	Plant and equipment lighting for operation and maintenance	Low	Area. Lighting walkway and work areas.
Structures, towers, and docks	Air clearance lighting to warn of equipment proximity and potential interference	Moderate	Point. Shows extent and height of facilities.
Notes:			
^a Area Lighting: General illumination for pedestrian and vehicle travel, general task lighting, or security. Directed Lighting: Illumination for function purposes such as inspections, safe equipment operation and maintenance, and work areas. Point Lighting: Light sources identifying direction or navigational extents, height, or direction.			
Source: Millennium Bulk Terminals—Longview 2014.			

Figure 4.3-4. Proposed Operational Areas for the On-Site Alternative

Operation of the terminal at the On-Site Alternative location would result in the following direct impacts.

Urban and Industrial Views

Visual Features

Operation of the terminal would introduce new visual features to the project area. The new visual features would include new structures and equipment, additional workers, and increased vehicle, train, and ship movements on and adjacent to the project area. It is also anticipated at least one Panamax-sized vessel would be moored at the proposed dock facilities at any given time. These features would alter the aesthetics of the project area. The new activities would also result in new sources of light and glare. However, these changes would be consistent with the existing industrial aesthetics of the project area and the surrounding area.

Viewpoints from urban and industrial areas are generally near the project area. Views are dominated by existing industrial facilities, operations, and activities. Large-scale buildings, heavy utility transmission lines, industrial plumes, and ancillary facilities and equipment define the existing visual character of the project area. The coal stockpiles and conveyor systems, rail lines, and other equipment and structures would be consistent with the overall visual character of the urban and industrial viewpoints. With the On-Site Alternative, the existing rectangular, straight-line potline and cable plant buildings would be replaced by coal stockpiles. The sizes and long, straight lines of the coal piles would be similar to the concrete and metal buildings, and the horizontal ground-level rail lines would be less visually dominant than the existing buildings. Vessels moored at the proposed docks are not expected to be visible from most urban and industrial viewpoints. Appendix I, *Viewpoints for Aesthetics Analysis*, of this Draft EIS provides the photo simulations for Viewpoints 1 and 2. Overall, because the On-Site Alternative would be visually compatible with surrounding industrial uses and would affect a low number of sensitive viewers, the On-Site Alternative would have a low level of impact on views from urban and industrial viewpoints.

Sources of Light and Glare

Artificial light is common throughout the Longview industrial area and along the Columbia River adjacent to the Port of Longview. The extent and concentration of similar heavy industrial operations facilities and land uses would make changes in nighttime lighting in a particular area difficult to discern. The new artificial light produced by the On-Site Alternative would be partially offset by the removal of some outdoor ambient lighting during demolition of existing buildings and facilities. Also, the On-Site Alternative would have considerably fewer reflective surfaces than the existing buildings. Glare impacts for urban and industrial viewers would be reduced because metal, concrete, and other reflective materials (including windows) would be demolished under the On-Site Alternative. Overall, the On-Site Alternative would result in no new light and glare impacts on views from urban and industrial areas.

Visual Perception

The viewers in this area would be industrial workers and commuters traveling on Industrial Way. The visual perception of these viewers is limited because their attention is focused on work, construction, or commuting activities. Project area operations would occur 24 hours per day, similar to adjacent industrial areas. The general sensitivity of workers at adjacent facilities is considered low. The On-Site Alternative would result in a low level of impacts on viewers' visual perception from urban and industrial Viewpoints 1, 2, and 3.

Table 4.3-4 summarizes the visual, light and glare, and viewer impacts from Viewpoints 1, 2, and 3 for photo simulations of Viewpoints 1 and 2.

Table 4.3-4. Visual, Light and Glare, and Viewer Impacts (Viewpoints 1, 2, and 3)—On-Site Alternative

View-point	View	Distance (feet) ^a	Visual Impact	Light & Glare Impact	Viewer Impact
1	Looking west on Industrial Way. Primary view would be of rail lines and stockpile areas. Demolition of existing buildings and lighting and reduction of manmade materials would reduce visual impacts. Visual impact also would be reduced because views would be partially obscured by utility transmission lines and structures.	1,620	L	N	L
2	Looking south along 38th Street. Main views would be almost perpendicular to project area. Demolition of existing buildings and lighting and reduction of manmade materials would reduce visual impacts and resulting colors and textures would partially blend into background and natural environments.	2,050	L	N	L
3	Looking southwest from Mint Farm Industrial Area (from Prudential Boulevard). Most views would be screened by vegetation. Some structures and facilities could be seen more easily during winter months when vegetation is dormant.	2,680	L	N	L

Notes:

^a Distance from project area.

L = low level of impact; N = no impact.

Rural and Residential Views

Visual Features

Prominent views from the rural and residential viewpoints include the existing industrial area along the Columbia River and a broader context including Mount St. Helens, Mount Rainier, the

Columbia River, surrounding hillsides, rural farmland, and continuous stands of native vegetation and other features bringing natural characteristics into the visual character.

Views from the upland viewpoints would change as the large, rectangular potline and cable plant buildings are demolished and replaced by large coal piles with the On-Site Alternative. The demolition of approximately 6 acres of forested wetland would change the visual character of the northwest corner of the project area. However, due to the proximity of Mount Solo and the Mount Solo Landfill, which obstruct views from many rural and residential areas, this part of the project area is seen by a limited number of viewers and commuters traveling along US 30 in Oregon. Overall, the project area would continue to appear in a larger context of existing vegetated and undeveloped areas. The On-Site Alternative would not obstruct views of Mount St. Helens, Mount Rainier, or the Columbia River from rural and residential viewpoints. Views of the shoreline would be obstructed by the proposed docks, which would be up to 2,300 feet long. Appendix I, *Viewpoints for Aesthetics Analysis*, presents the photo simulations for Viewpoints 5, 6, and 8.

The scale of the proposed docks, vessels, shiploaders, coal piles, and related conveyors would be discernible from the more distant rural and residential viewpoints. However, these facilities would appear in the context of the existing upland industrial facilities and adjacent heavy industrial areas as a relatively continuous visual resource for viewers. Overall, visual impacts on rural and residential views due to the On-Site Alternative would be difficult to perceive because of the distance between the viewpoints and the project area, as well as the On-Site Alternative's visual compatibility with adjacent industrial uses. Therefore, the On-Site Alternative would result in a low level of impact on rural and residential views from Viewpoints 5, 6, 7, and 8. The On-Site Alternative would not be visible from Viewpoints 4 and 9 and would result in no impact on views from these viewpoints.

Sources of Light and Glare

New artificial light produced by the On-Site Alternative would be partially offset by the removal of some outdoor ambient lighting during demolition of existing buildings and facilities. In addition, glare would be reduced because most demolished facilities include extensive metal, concrete, or other reflective surfaces (including windows). In distant views from hillsides in Longview (Viewpoint 5), the On-Site Alternative's artificial lighting would likely be difficult to discern given the distance between the viewpoint and the project area and the existing context of lighted industrial uses along the Columbia River. Furthermore, the On-Site Alternative would not be visible from Viewpoint 4 on Barlow Point and Viewpoint 9 in West Longview because of the Mount Solo Landfill and existing vegetation. Therefore, the On-Site Alternative would result in a low level of impact on rural and residential views from Viewpoint 5 and no impact on rural and residential views from Viewpoints 4 and 9.

The proposed dock facilities would require prolonged moderate to high levels of light for operation at night while vessels are arriving, departing, or being loaded. Proposed lighting associated with the dock facilities would be reflected in the waters of the Columbia River and could be visible from some rural and residential viewpoints (Viewpoints 6, 7, and 8). However, the distance to these viewpoints and the existing concentration of similar facilities and land uses along the waterfront would make changes in nighttime lighting difficult to discern. Therefore, the On-Site Alternative would have a low level of impact on light and glare at these viewpoints.

Overall, light and glare impacts for rural and residential views would range from no impact to low impact.

Visual Perception

Viewers in the rural and residential area are presumed to be residents within the City of Longview neighborhoods or of surrounding low-density residential areas, including areas south of the Columbia River in Oregon. Some travelers on local and state transportation corridors such as US 30 south of the Columbia River would also have dispersed views of the project area. Visual sensitivity in the rural and residential area is assumed high because views are often prolonged and stationary and residential viewers are sensitive to change. However, most residents would not have direct views of the project area and the On-Site Alternative would be in keeping with the existing industrial character of the surrounding area. Therefore, the On-Site Alternative would result in a low level of impact on viewers' visual perceptions from Viewpoints 5, 6, 7, and 8, and no impact on views from Viewpoints 4 and 9.

Table 4.3-5 provides a summary of visual, light and glare, and viewer impacts from Viewpoints 4 through 9 (Appendix I, *Viewpoints for Aesthetics Analysis*).

Table 4.3-5. Visual, Light and Glare, and Viewer Impacts (Viewpoints 4 through 9)—On-Site Alternative

View-point	View	Distance (feet) ^a	Visual Impact	Light & Glare Impact	Viewer Impact
4	Looking east from Barlow Point Road. General visual character is agricultural with large tracts of farmland and dispersed housing. Views obstructed by small hill, broad row of trees, and Columbia River levee. Project area would not be visible from this location. Direct sources of light would not be seen.	7,500	N	N	N
5	Looking southwest from hillside residential areas (from Alexia Court). Views are elevated above the project area. Small portion of proposed facility would be visible in this view; other locations on hillside are expected to have views of project area. Areas are characterized by contiguous residential neighborhoods on winding hillsides. Most views partially or completely blocked by vegetation and Mount Solo. Light sources could be discerned but no single facility expected to dominate views.	14,875	L	L	L

View-point	View	Distance (feet) ^a	Visual Impact	Light & Glare Impact	Viewer Impact
6 & 7	Looking north/northwest from US 30. Views are from vehicles traveling along highway and from two scenic viewpoints. Views of Mount St. Helens, Mount Rainier, the Columbia River, rural farmland, and surrounding hillsides are prominent scenic focal points. Individual facilities and vessels can be discerned but no single facility expected to dominate views. Lighting for dock facilities could be visible and reflected by Columbia River while vessels are arriving, departing, or being loaded.	13,390–14,980	L	L	L
8	Looking northeast from Alston Mayger Road. Views of project area occur primarily from single-family residences. Viewpoint dominated by scenic views of Mount St. Helens, Columbia River, and Lord and Walker Islands. Individual facilities and vessels can be discerned but no single facility expected to dominate views. Lighting for dock facilities could be visible and reflected by Columbia River while vessels are arriving, departing, or being loaded.	10,930	L	L	L
9	Looking south from West Longview residential neighborhood. Project area is not be visible from this location.	8,000	N	N	N
Notes:					
^a Distance from project area.					
L = low level of impact; N = no impact, US 30 = U.S. Route 30					

Natural Views

Visual Features

The proposed docks, shiploaders, coal stockpiles, trestles, and ancillary equipment associated with the On-Site Alternative would introduce new large-scale industrial uses along the Columbia River. The On-Site Alternative would introduce straight lines, geometric forms, hard visual textures, and human-made materials to the project area. It is also anticipated at least one vessel would be moored at the proposed docks at any given time. The Panamax-sized vessels using the proposed docks would be approximately 950 feet in length, 106 feet wide (beam), and 190 feet high. These changes would be visible to on-water recreational users and viewers from Dibblee Beach on the south shore of the river (Viewpoint 10). However, the new facilities would be contiguous and visually consistent with existing industrial facilities, and vessels are commonly traveling up river, anchored, or moored along the Port of Longview shoreline. Therefore, the On-Site Alternative would have a moderate level of impact on views from Viewpoint 10 because it

would introduce operations, buildings, and structures visible to sensitive viewers, but would be consistent with adjacent land uses.

Appendix I, *Viewpoints for Aesthetics Analysis*, presents the photo simulation for Viewpoint 10. The On-Site Alternative would not be visible from Viewpoint 11 and would not result in impacts on views from Viewpoint 11.

Sources of Light and Glare

New lighting associated with the dock facilities would result in a moderate level of light impacts on views from Dibblee Beach (Viewpoint 10) where the On-Site Alternative's lighting would be visible and would be reflected in the waters of the Columbia River. For distant viewers, artificial lighting is common throughout the Port of Longview industrial area on the Columbia River, and the concentration of similar facilities and land uses would make changes in nighttime lighting difficult to discern. The On-Site Alternative would result in moderate impacts related to light and glare because most recreational viewers in natural areas view the project area during daylight conditions.

Visual Perceptions

The views from natural areas are presumed to be from on-water recreational viewers (e.g., anglers, water trail users, cruisers) and viewers from Dibblee Beach on the south bank of the Columbia River. For a typical recreationalist, views would be infrequent and of short to moderate duration. However, viewer sensitivity tends to be high because of viewers' expectation of natural views, the public nature of and interest in some natural areas, and the contrast between natural and industrial lands. Moreover, the movement of vessels, trains, and equipment introduces additional visual impacts on viewers from natural areas.

The Columbia River is also navigated by commercial boat operators. Viewers from commercial boats are expected to have a low sensitivity to changes in aesthetics. Because of low sensitivity, infrequent views, and the transitory nature of boat operator views, it is unlikely viewers would experience negative visual impacts based on changes to the existing project area. Overall, the On-Site Alternative would not result in impacts on viewers' visual perceptions from Viewpoint 11 and would result in a moderate level of impact on viewers' visual perceptions from Viewpoint 10.

Table 4.3-6 summarizes the visual, light and glare, and viewer impacts from Viewpoints 10 and 11. Appendix I, *Viewpoints for Aesthetics Analysis*, provides a photo simulation of Viewpoint 10.

**Table 4.3-6. Visual, Light and Glare, and Viewer Impacts (Viewpoints 10 and 11)—
On-Site Alternative**

View-point	View	Distance (feet)^a	Visual Impact	Light & Glare Impact	Viewer Impact
10 ^b	Looking north/northwest from Dibblee Beach. Views are of wide flat-water channel with Lord and Walker Islands to west. Heavy industrial uses and facilities characterize north riverbank. Light sources could be discerned and glare impacts are increased by water; however, no single facility expected to dominate views and recreational viewers are limited at night. Lighting for dock facilities could be visible and reflected by Columbia River while vessels are arriving, departing, or being loaded.	6,500	M	M	M
11	Looking east from Willow Point Boat Launch. Views of project area are obstructed by vegetation on two islands in Columbia River and light sources would have no impact. Located outside the study area, approximately 4.5 miles northwest of Longview on Columbia River, but allows river access from which public could travel upriver and into study area, where views of project area could be affected as for Viewpoint 9.	21,375	N	N	N
Notes:					
^a Distance from project area.					
^b This viewpoint also represents the potential impacts of the On-Site Alternative for on-water viewers. Views would be comparable from Dibblee Beach and an on-water location.					
M = moderate level of impact; N = no impact					

Operations—Indirect Impacts

Operation of the proposed export terminal at the On-Site Alternative location would not result in indirect impacts on aesthetics.

4.3.5.2 Off-Site Alternative

This section describes the potential impacts that could occur in the study area as a result of construction and operation of the proposed export terminal at the Off-Site Alternative location.

Construction—Direct Impacts

With the exception of the clearing and demolition activities, the construction of the Off-Site Alternative would be similar to the On-Site Alternative. Demolition activities would involve removing the existing trees and vegetation directly south of Mount Solo and the Mount Solo landfill

and grading the project area. Following clearing and general preparation of the project area, construction activities under the Off-Site Alternative would be the same as those under the On-Site Alternative but would include the construction of an extension of the Reynolds Lead to the project area and a new access road from Industrial Way/State Route 432. The Off-Site Alternative would also include the same soil preloading activities as the On-Site Alternative.

Construction-related activities associated with the Off-Site Alternative could result in direct impacts as described below.

Visual Features

Construction activities in the project area would be visible to residents, workers, commuters, recreationalists, and boat operators, but these activities would be temporary and consistent with the general industrial context of the surrounding area. The construction activities would be visible to sensitive viewers from certain viewpoints. In particular, construction activities would be visible and would displace the project area's existing rural visual context for viewers at rural and residential viewpoints in Barlow Point and West Longview (Viewpoints 4 and 9). However, there would be a low number of viewers at each of these viewpoints. Construction of the Off-Site Alternative would result in a moderate level of visual impact.

Construction—Indirect Impacts

Construction of the terminal at the Off-Site Alternative location would not result in indirect impacts on aesthetics.

Operations—Direct Impacts

Operations-related activities are described in Chapter 3, *Alternatives*, and would be the same as under the On-Site Alternative. The Off-Site Alternative would introduce new light sources to the project area. These light sources would be substantially the same as those described for the On-Site Alternative.

Operation of the terminal at the Off-Site Alternative location would result in the following direct impacts.

Urban and Industrial Views

Visual Features

Constructing a terminal at the Off-Site Alternative location would introduce new visual features. The new visual features would include new structures and equipment in the project area, additional workers, and increased vehicle, train, and vessel movements on and adjacent to the project area. At least one Panamax-sized vessel would likely be moored at Docks 2 and 3 at any given time. These features would substantially alter the aesthetics of the project area from an undeveloped area to a heavily used industrial facility. The new activities in the project area would also introduce new sources of light and glare. These changes would be generally consistent with the existing industrial visual characteristics to the east, but would not be consistent with the existing visual character of the project area or the residential and agricultural areas to the west and north.

The general visual characteristics and views from the urban and industrial viewpoints would remain similar to existing conditions. Existing large-scale buildings, heavy utility transmission lines, industrial plumes, and ancillary facilities and equipment, as well as existing vegetation, would screen most views of the Off-Site Alternative operations from the urban and industrial viewpoints. Some intermittent views of coal piles, conveyors, and structures may exist but the bold lines, colors, and textures would be visually compatible with surrounding industrial uses. Vessels moored at Docks 2 and 3 are not expected to be visible from most urban and industrial viewpoints. Overall, the Off-Site Alternative would have a low level of impact on views from urban and industrial viewpoints.

Sources of Light and Glare

Artificial lighting would be introduced into the project area but would be similar to other heavy industrial facilities and consistent with the nighttime lighting context for urban and industrial viewers. Changes in light conditions would be difficult to discern for viewers at these viewpoints. The Off-Site Alternative would have a low level of light and glare impacts on views from Viewpoints 1, 2, and 3.

Visual Perception

The viewers in this area would be industrial workers and commuters traveling on Industrial Way. The visual perception of these viewers is limited because their attention is focused on work, construction, or commuting activities. Project area operations would occur 24 hours per day, similar to the operating hours of adjacent industrial areas. The sensitivity of workers at adjacent facilities is generally considered to be low. The Off-Site Alternative would result in a low level of impacts on viewers' visual perception of urban and industrial viewpoints. Table 4.3-7 summarizes the visual, light and glare, and viewer impacts of the Off-Site Alternative from Viewpoints 1, 2, and 3.

Table 4.3-7. Visual, Light and Glare, and Viewer Impacts (Viewpoints 1, 2, and 3)—Off-Site Alternative

View-point	View	Distance (feet) ^a	Visual Impact	Light & Glare Impact	Viewer Impact
1	Looking west on Industrial Way. Primary view would be screened by existing heavy industrial facilities, utility transmission lines, and existing vegetation.	7,350	L	L	L
2	Looking south along 38th Street. Primary view would be screened by existing heavy industrial facilities, utility transmission lines, and existing vegetation.	6,810	L	L	L
3	Looking southwest from Mint Farm Industrial Area (from Prudential Boulevard). Most views would be screened by vegetation.	7,950	L	L	L
Notes:					
^a Distance from project area					
L = low level of impact; N = no impact.					

Rural and Residential Views

Visual Features

Prominent views from the rural and residential viewpoints include the existing industrial area along the Columbia River and a broader context including Mount St. Helens, Mount Rainier, the Columbia River, surrounding hillsides, rural farmland, and fairly continuous stands of native vegetation and other features bringing natural characteristics into the visual landscape character. The existing dominant character of the project area is open space with stands of mature trees with intermittent industrial development.

The displacement of open space and mature trees and the conversion of the project area to a large-scale industrial facility would introduce a high level of visual contrast to the project area, particularly for nearby viewers with direct views of the project area (Viewpoints 4 and 9). The proposed industrial facilities and operations would also introduce new sources of light and glare. However, there would be a low number of sensitive viewers at Viewpoints 4 and 9. Therefore, the Off-Site Alternative would result in a moderate level of visual impacts on views from Viewpoints 4, 6, 7, 8, and 9 and no impact on views from Viewpoint 5.

Sources of Light and Glare

The displacement of the rural visual character and introduction of new light and glare sources would be discernible from distant rural and residential viewpoints (Viewpoints 6, 7, and 8). Because these viewpoints are approximately 1 to 3 miles from the project area, no individual industrial facility would be dominant from these viewpoints and the Off-Site Alternative would blend into the overall industrial context of the Columbia River waterfront. However, the Off-Site Alternative would expand the concentration of industrial development west and downstream from its current extent along the Columbia River in Longview. Therefore, the Off-Site Alternative would result in moderate level of light and glare impacts on views from Viewpoints 4, 6, 7, 8, and 9, and a low level of impact on views from Viewpoint 5.

Appendix I, *Viewpoints for Aesthetics Analysis*, presents the photo simulations of the Off-Site Alternative from Viewpoints 4, 8, and 9.

Visual Perception

Viewers in the rural and residential area are presumed to be residents within Longview neighborhoods or of surrounding low-density residential areas, including areas south of the Columbia River in Oregon. Some travelers on local and state transportation corridors such as US 30 south of the Columbia River would also have dispersed views of the project area. Visual sensitivity in the rural and residential area is assumed to be high because views are often prolonged and stationary and residential viewers are sensitive to change. However, most residents would not have direct views of the project area and most views would be distant from the project area. Therefore, the Off-Site Alternative would result in a moderate level of impact on viewers' visual perceptions from Viewpoints 4, 6, 7, 8, and 9, and no impact on views from Viewpoint 5.

Table 4.3-8 summarizes the visual, light and glare, and viewer impacts of the Off-Site Alternative from Viewpoints 4 through 9.

Table 4.3-8. Visual, Light and Glare, and Viewer Impacts (Viewpoints 4 through 9)—Off-Site Alternative

View-point	View	Distance (feet)^a	Visual Impact	Light & Glare Impact	Viewer Impact
4	Looking east from Barlow Point Road. Off-Site Alternative facilities and operations would be less than 1 mile distant but would be visible to a low number of viewers.	1,150	M	M	M
5	Looking southwest from hillside residential area (from Alexia Court). Views are elevated above Barlow Point. Most views of Off-Site Alternative would be blocked by existing vegetation and Mount Solo. Some ambient night time light may be discernible.	20,000	N	L	N
6 & 7	Looking north/northwest from US 30. Views are from vehicles traveling along highway and from two scenic pullouts. Views of Mount St. Helens, Mount Rainier, Columbia River, rural farmland, and surrounding hillsides are prominent scenic focal points. No individual facilities and light sources are expected to be visually dominant but displacement of rural open space and existing vegetation can be discerned. Lighting for dock facilities may be visible and reflected by Columbia River while vessels are moored.	16,900 – 18,200	M	M	M
8	Looking northeast from Alston-Mayger Road. Views of the project site occur primarily from single-family residences. Viewpoint dominated by scenic views of Mount St. Helens, Columbia River, and Lord/Walker islands. No individual facilities and light sources are expected to be visually dominant but displacement of rural open space and existing vegetation can be discerned. Lighting for dock facilities may be visible and reflected by Columbia River while vessels are arriving, departing, or being loaded.	6,100	M	M	M

View-point	View	Distance (feet) ^a	Visual Impact	Light & Glare Impact	Viewer Impact
9	Looking south from West Longview residential neighborhood. General visual character is agricultural with large tracts of farmland and dispersed single-family housing. Off-Site Alternative would introduce high visual contrast but would be visible to a low number of viewers.	3,500	M	M	M

Notes:

^a Distance measured from viewpoint to nearest project limit boundary.

L = low level of impact; M = moderate level of impact; H = high level of impact.

Natural Views

Visual Features

Existing landforms and vegetation on Lord and Fisher Islands block most views of the project area from Viewpoints 10 and 11. Therefore, the Off-Site Alternative would result in no visual impact on views from Viewpoints 10 and 11.

For the Off-Site Alternative, on-water views from Viewpoint 10 are considered separately, because the project area would not be visible from Viewpoint 10. For recreational viewers on the Columbia River, a strong visual contrast would be introduced by proposed docks, shiploaders, trestles, ancillary equipment, and large berthed vessels associated with the Off-Site Alternative. Straight lines, geometric forms, hard visual textures, and human-made materials would displace views of mature trees, riparian vegetation, and the existing riverbank. Therefore, the overall visual impacts on on-water views would be moderate, as the Off-Site Alternative would introduce operations, buildings, and structures visible to sensitive on-water viewers.

Sources of Light and Glare

New lighting associated with Docks 2 and 3 would result in moderate light impacts for on-water viewers. Glare conditions from light reflected in the waters of the Columbia River would also affect viewers on the water. However, artificial lighting is common throughout the Longview industrial area on the Columbia River and light and glare impacts would be limited because most recreational viewers in natural areas view the project area during daylight conditions. The Off-Site Alternative would result in low light and glare impacts on views at Viewpoints 10 and 11 and moderate impacts from the water.

Visual Perception

The views from natural areas are presumed to be from on-water recreational viewers (e.g., anglers, cruisers). For a typical recreationalist, views are assumed to be infrequent and of short to moderate duration. However, viewer sensitivity tends to be high because of viewers' expectation of natural views, the public nature of and public interest in some natural areas, and the contrast between natural and industrial lands. The movement of vessels, trains, and equipment introduces additional visual impact on viewers from natural areas.

The Columbia River is also navigated by commercial boat operators. Viewers from commercial boats are expected to have a low sensitivity to changes in aesthetics. Because of low sensitivity, infrequent views, and the transitory nature of boat operator views, it is unlikely viewers would experience negative visual impacts based on changes to the project area. The Off-Site Alternative would result in low impacts on viewers' visual perceptions at Viewpoints 10 and 11 and moderate impacts from the water.

Table 4.3-9 summarizes the visual, light and glare, and viewer impacts from Viewpoints 10 and 11 as well as from an on-water viewpoint.

Table 4.3-9. Visual, Light and Glare, and Viewer Impacts (Viewpoints 10 and 11 and On-Water)—Off-Site Alternative

View-point	View	Distance (feet) ^a	Visual Impact	Light & Glare Impact	Viewer Impact
10	Looking north/northwest from Dibblee Beach. Views are of wide flat-water channel with Lord/Walker islands to west. Heavy industrial uses and facilities characterize north riverbank. Indirect light sources may be discerned but recreational viewers are limited at night. Barlow Point is not directly visible from this viewpoint.	10,550	N	L	L
11	Looking east from Willow Point Boat Launch. Views of Barlow Point are obstructed by vegetation on two islands in Columbia River and would have no impact. Indirect light sources may be discerned but recreational viewers are limited at night. Located outside study area, approximately 4.5 miles northwest of Longview on the Columbia River, but allows river access from which public could travel upriver and into study area, where views of the project area may be affected.	15,100	N	L	L
On-Water	On-water views from the Columbia River. Views of Barlow Point would change from undeveloped land to an industrial area with straight lines, geometric forms, hard visual textures, and manmade materials visible to on-water viewers. At least one Panamax-sized vessel may be moored at Docks 2 and 3 at any given time.	Varies	M	M	M

Notes:

^a Distance measured from viewpoint to nearest project limit boundary.

L = low level of impact; N = no impact.

Operations—Indirect Impacts

The Off-Site Alternative would not result in indirect impacts on aesthetics.

4.3.5.3 No-Action Alternative

Under the No-Action Alternative, the Corps would not issue a Department of the Army permit authorizing construction and operation of the proposed export terminal. As a result, impacts resulting from constructing and operating the terminal would not occur. However, not constructing the terminal would likely lead to expansion of the adjacent bulk product business onto the export terminal project area.

As allowed under existing zoning, the No-Action Alternative could result in new buildings or structures in the project area, an expanded bulk product terminal, and increased bulk product transfer activities. Changes to aesthetic and visual conditions would occur as a result of these new structures and changes to operations, which would include the increased movements of people, equipment, vehicles, trains and ships as bulk product transfer activities increase. These activities would alter the aesthetics of the project area. However, the changes would be consistent with the existing industrial aesthetics of the project area and the surrounding area, and would therefore result in a low level of impact.

Construction of the No-Action Alternative could involve demolishing and replacing some existing buildings in the project area to facilitate the expansion of current operations and development of an expanded bulk product terminal. As with the On-Site Alternative and Off-Site Alternative, construction activities under the No-Action Alternative would be visible to residents, workers, commuters, recreationalists, and boat operators, but these activities would be temporary and consistent with the general industrial context of the surrounding area. Furthermore, given the more limited physical changes likely to occur at the project area under the No-Action Alternative compared to the On-Site Alternative and Off-Site Alternative, construction activities would be of shorter duration and intensity. Like the On-Site Alternative and Off-Site Alternative, it would be difficult for more distant viewers to perceive noticeable changes during construction under the No-Action Alternative.

4.3.6 Required Permits

No permits related to aesthetics would be required for the proposed export terminal.

4.4 Cultural Resources

The term *cultural resources* refers to the broad range of resources that represent or convey a place's heritage or help tell the story of a region's past. Three categories of cultural resources are discussed in this section: archaeological resources, historical resources, and culturally significant properties. Archaeological resources encompass features and deposits located on or below the ground surface that are evidence of prior human occupation or use in a particular area. Historical resources are elements of the built environment, such as buildings or structures, or human-made objects or landscapes. Finally, culturally significant properties are sites or locations considered culturally important to the history of a group of people, or are locations where culturally important events or practices are known to have occurred. These can include sites or locations culturally significant to Indian tribes. In contrast, tribal resources refers to the collective rights and resources associated with a tribe's sovereignty or formal treaty rights. Tribal resources are addressed in Section 4.5, *Tribal Treaty Rights and Trust Responsibilities*.

This section describes cultural resources in the study area. It then describes potential impacts on cultural resources from construction and operation of the proposed export terminal. The analyses and findings from this section are based on research prepared by the Applicant pursuant to Section 106 of the National Historic Preservation Act (Section 106).

4.4.1 Regulatory Setting

Laws and regulations relevant to cultural resources are summarized in Table 4.4-1.

Table 4.4-1. Regulations, Statutes, and Guidelines for Cultural Resources

Regulation, Statute, Guideline	Description
Federal	
Section 106 of the National Historic Preservation Act (16 USC 470 <i>et seq.</i>)(36 CFR 800)	Section 106 ensures federal agencies consider cultural resources in any funded, licensed, or permitted undertaking prior to initiation, and provide the State Historic Preservation Officer, affected Native American tribes, and other interested parties an opportunity to comment on potential impacts on cultural resources.
National Register of Historic Places (16 USC 470a)	The NRHP is the official list of the nation's historic places worthy of preservation and is administered by the National Park Service as part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historical and archaeological resources.

Regulation, Statute, Guideline	Description
State	
Indian Graves and Records (RCW 27.44)	Protects Native American graves and burial grounds, encourages voluntary reporting of said sites when they are discovered, and mandates a penalty for disturbance or desecration of such sites.
Archaeological Sites and Resources (RCW 27.53)	Governs the protection and preservation of archaeological sites and resources and establishes DAHP as the administering agency for these regulations.
Abandoned and Historic Cemeteries and Historic Graves (RCW 68.60)	Protects and preserves abandoned and historic cemeteries and historic graves.
Shoreline Management Act (RCW 90.58)	Provides a statewide framework for managing, accessing, and protecting the Washington's significant shorelines including rivers, lakes, and coastal waters, including the consideration of significant cultural resources in these areas.
Local	
Longview Historic Preservation Ordinance (LMC 16.12)	Safeguards the heritage of the City of Longview and Cowlitz County by the identification, evaluation, designation, and protection of historic properties. Maintains a local register of historic places in each jurisdiction.
Notes: USC = United States Code; CFR = Code of Federal Regulations; NRHP = National Register of Historic Places; RCW = Revised Code of Washington; DAHP = Washington State Department of Archaeology and Historic Preservation; LMC = Longview Municipal Code	

4.4.2 Study Area

The study area for cultural resources consists of the project areas of both the On-Site Alternative and Off-Site Alternative, the areas of the Columbia River that would be directly affected by overwater structures and dredging for each alternative, and surrounding areas that would be affected by construction of the proposed export terminal (Figures 4.4-1 and 4.4-2). The study area also includes vantage points on the Oregon side of the Columbia River along U.S. Route 30 (US 30) to account for potential visual effects.

Figure 4.4-1. Cultural Resources Study Area—On-Site Alternative

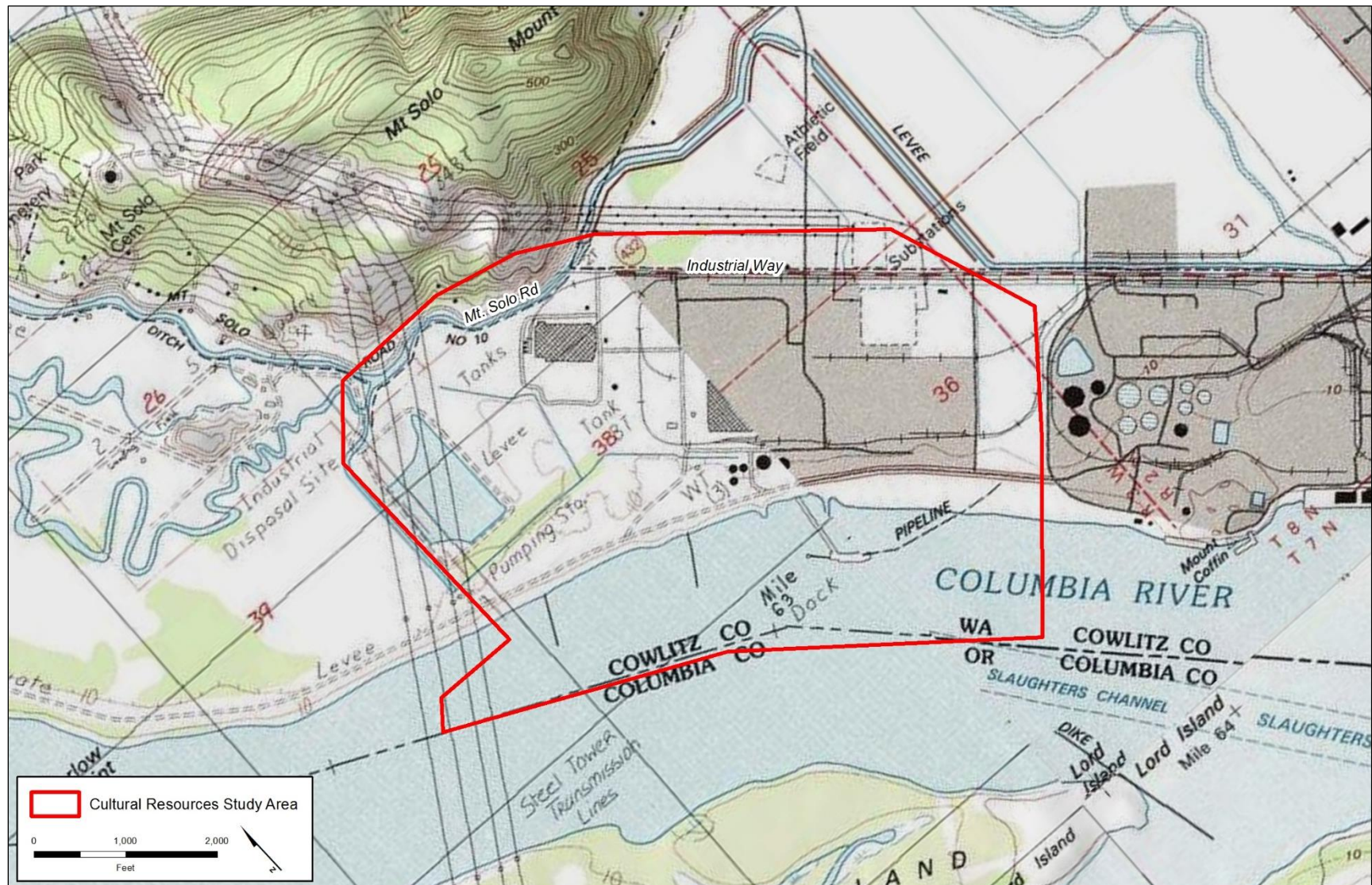
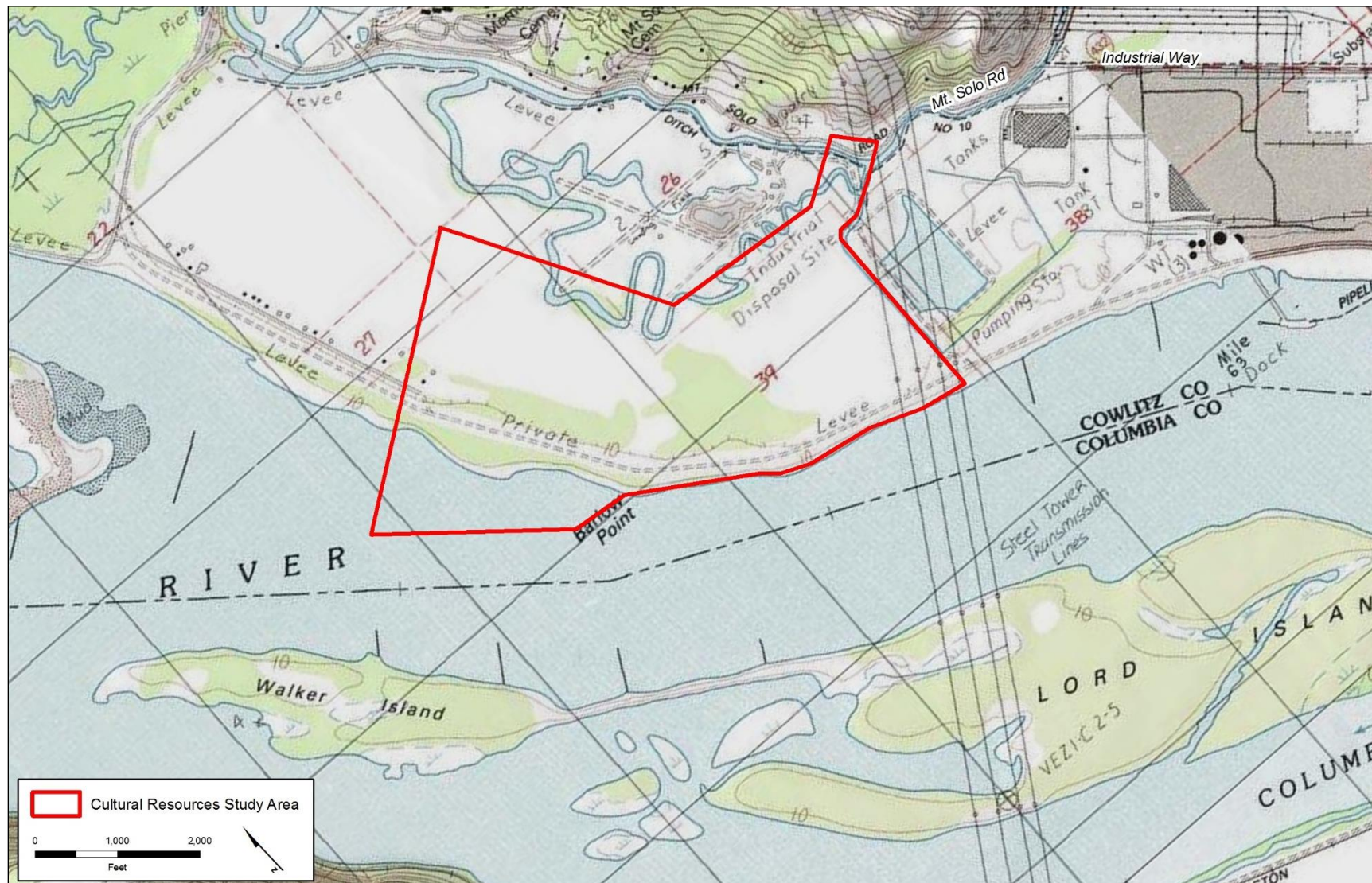


Figure 4.4-2. Cultural Resources Study Area—Off-Site Alternative

4.4.3 Methods

This section describes the sources of information and methods used to evaluate the potential impacts on cultural resources associated with the construction and operation of the proposed export terminal. This section also addresses how Cowlitz County and the Corps have initiated consultation with the Washington State Department of Archaeology and Historic Preservation (DAHP), the City of Longview, Bonneville Power Administration (BPA), the National Park Service, potentially affected Native American tribes, and the Applicant regarding the terminal and its potential impacts on cultural resources.

4.4.3.1 Information Sources

The following sources of information were used to identify potential impacts from construction and operation of the proposed export terminal on cultural resources in the study areas.

Data Sources

A literature review and records search was conducted to establish prehistoric and historic contexts and to identify previously recorded cultural resources in the study areas. These efforts used the following sources of information.

- A search of DAHP's Washington Information System for Architectural and Archaeological Records Database (WISAARD) for previously completed cultural resources studies and previously documented archaeological, ethnographic, and historical resources within a 1-mile radius of the project areas. An initial WISAARD file search was conducted for the On-Site Alternative in November 2011. Updated searches of WISAARD were completed for the On-Site Alternative in November 2013, and again in November 2014. A WISAARD file search was completed for the Off-Site Alternative in April 2016.
- Primary and secondary resources from local repositories, including the Cowlitz County Historical Museum.
- Historic maps, including the Washington State General Land Office plat maps and topographic quadrangle maps from the U.S. Geological Survey (USGS).
- Geological and historical documents and prior geotechnical studies that characterize the local geology and landform development history.
- Aerial photographs from the 1960s obtained from the Applicant and additional aerial photographs from the Cowlitz County Historical Museum.
- Interviews with former employees of the former Reynolds Metal Company facility (Reynolds facility), currently employed by the Applicant, conducted in November 2014.
- Outreach efforts and consultation with affected tribes.

Information for this section was also extracted from the following technical reports. These documents contain confidential historic and archaeological information and access to this information is restricted by the National Historic Preservation Act of 1966, as amended, and the Archaeological Resources Protection Act of 1979, as amended. These documents are only available to agencies with jurisdiction.

- *Identification of Historic Properties: Existing Information and Proposed Research, Millennium Coal Export Terminal, Cowlitz County, Washington—June 19, 2015* (AECOM 2015)
- *Identification of Historic Properties: Existing Information and Proposed Research, Millennium Coal Export Terminal, Cowlitz County, Washington—August 18, 2015* (AECOM 2015)
- *Historic and Cultural Resources Assessment, Millennium Coal Export Terminal, Cowlitz County, Washington—October 1, 2015* (AECOM 2015)
- *Off-Site Alternative – Barlow Point Historic and Cultural Resources Assessment—April 22, 2016* (AECOM 2016)

Fieldwork

Field investigations were conducted between 2011 and 2015 to identify cultural resources in the study area for the On-Site Alternative. These investigations considered the archaeological and historical resources and the landform development of the project area for the On-Site Alternative.

- Windshield survey and walkthrough in November 2011, to assess existing conditions of the study area in the vicinity of the project area for the On-Site Alternative.
- Historic resource surveys conducted in April 2014 and January 2015 to prepare a historic property inventory of resources associated with the former Reynolds facility, which is part of the Applicant's leased area. The architectural inventory included photographic documentation, resource descriptions, and statements of significance for buildings, structures, and landscape features. Individual resources were recorded on Washington Historic Property Inventory forms in WISAARD. In addition, a nomination form for the National Register of Historic Places (NRHP) was prepared for the former Reynolds facility for evaluation as a historic district.
- Pedestrian survey in January 2015, to document landscape features associated with the former Reynolds facility such as several former landfills and surface impoundments. These features were documented as individual resources on Washington Archaeological Site forms, per guidance from DAHP. Building foundations associated with the South Plant portion of the former Reynolds facility were likewise documented as an archaeological site, consistent with protocols established through consultation with DAHP.
- Geotechnical investigations of upland soils in the project area for the On-Site Alternative using two sampling methods: geoprobing¹ and mud rotary coring. Geoprobe sampling was used to recover 21 intact sediment cores to anticipated maximum depths of 25 feet (the maximum depth of anticipated compression effects). A maximum total volume of 1.23 cubic feet was recovered from each geoprobe sample. Seven geotechnical borings were drilled to a minimum depth of 70 feet (the maximum depth of proposed support piles). The 70-foot cores were drilled using a mud rotary method and sediment samples were obtained using split-spoon samplers and Shelby tubes. A maximum total soil volume of 2.03 cubic feet was recovered from each

¹ A geoprobe is a tubular tool driven into the ground to sample soil.

geotechnical boring. Soil samples were collected from two cores for radiocarbon dating and from three cores, for tephra² identification. These efforts helped determine the chronology of the landform creation in the project area and the area's potential to contain archaeological resources.

A cultural resources field inventory has not been completed for the Off-Site Alternative project area because the area consists of private property and access has not been obtained. Technical analysis of this area to date has been limited to a desktop review of the affected environment.

Research Design

Research and field data described above were collected, compiled, and analyzed by qualified cultural resources professionals. A research design for the identification and evaluation of cultural resources was prepared for the On-Site Alternative in June 2015 (McDaniel et al. 2015 cited in AECOM 2015). This document provided the following information used to refine identification of resources.

- A definition of the affected environment.
- A photographic inventory of former buildings at the South Plant portion of the former Reynolds facility.
- An archaeological work plan.
- An analysis of potential impacts on shorelines caused by increases in marine vessel traffic.
- A comprehensive study of historical channel migration at the study area. The study addressed the potential for cultural resources to be present in the proposed in-water dredge prism (the extent of the area to be dredged).

4.4.3.2 Impacts Analysis

The following methods were used to identify and evaluate the potential impacts from construction and operation of the proposed export terminal on cultural resources in the study area.

The shoreline analysis included a desktop review of information sources and the development of a geographic information system (GIS) model. The GIS model helped identify previously documented archaeological sites as the most at risk for shoreline erosion. These sites were then inspected at a reconnaissance level. The historical channel analysis included an assessment of historical bathymetric and channel migration data to address in-water conditions in the study area and the potential for eroded cultural materials to be present in the proposed dredging prism.

Historic Resources

For historic resources, identified buildings and structures at least 45 years old in the study area were evaluated to determine their eligibility for listing in the NRHP and the Washington Heritage Register (WHR). An NRHP nomination form was prepared for the former Reynolds facility, so the many elements of the property could be evaluated as a possible historic district. The nomination form comprehensively accounted for all buildings, structures, and landscape features situated on the former Reynolds facility.

² Tephra is fragmental material produced by a volcanic eruption.

Archaeological Resources

For archaeological resources, field investigators were precluded from using traditional methods of subsurface archaeological investigation, such as exploratory shovel probing or trenching, due to existing development and the depths of fill materials within the study area. Instead, prior geotechnical studies and over 100 previous geotechnical bore logs were reviewed to address the extent of fill within the study area and the potential existence of buried archaeological remains (Anchor QEA 2011; GRI 2012, both cited in AECOM 2015). These data were used to help guide the placement of additional deep test borings (Bundy 2010a; Anchor QEA 2012, both cited in AECOM 2015), as described in Section 4.4.3.1, *Information Sources, Fieldwork*. The prior studies and the soil samples indicated a potential for the proposed export terminal to affect cultural resources in the study area. Impacts were determined by evaluating if construction and operations would alter any characteristic of a cultural resource that qualifies for inclusion in the NRHP or the WHR, or affect a recorded archaeological site.

4.4.3.3 Agency and Tribal Consultation

The Corps has initiated consultation under Section 106 of the NHPA with DAHP, the City of Longview, Cowlitz County, BPA, the National Park Service, potentially affected Native American tribes, and the Applicant regarding the proposed export terminal and potential impacts on cultural resources. The Corps is currently consulting under Section 106. A Memorandum of Agreement is expected to stipulate measures to help mitigate the terminal's impacts on cultural resources in the study area.

4.4.4 Affected Environment

This section describes the affected environment in the study areas related to cultural resources.

4.4.4.1 Setting

Precontact Context

Studies of the archaeology and prehistory of the Pacific Northwest divide the prehistory of the region into multiple phases or periods from about 6,000 years Before the Common Era (BCE) to the 1850s. These periods are delineated by changes in regional patterns of land use, subsistence, and tool types over time; they are academic constructs and do not necessarily reflect Native American viewpoints. A generally accepted cultural sequence for the prehistory of the lower Columbia River region consists of four periods (Minor 1983 cited in AECOM 2015): Youngs River complex (6000 to 4000 years BCE); the Seal Island phase (4000 BCE to the Common Era [CE] 0); the Ilwaco phase (CE 0 to 1775); and the Ethnographic period (CE 1775 to 1851).

Ethnographic Context

The study area falls within the territory principally used by two groups. The Cathlamet, an Upper Chinookan-speaking people, resided along the Columbia River, east of the Lower Chinook and west of the Multnomah groups. The Cowlitz, a Salish-speaking group, resided in the Cowlitz River drainage from its mouth to below Mayfield Dam, along segments of the Toutle, Newaukum, and South Fork of the Chehalis Rivers (Curtis 1913; Hajda 1990; Silverstein 1990, all cited in AECOM 2015). During the early 19th century, the Skilloot, a subset of the Chinookan Cathlamet, resided

along both sides of the Columbia River near the study area (Lewis 2013 cited in AECOM 2015). These peoples were prolific traders who transported goods between coastal groups and interior tribes (Kinkade 1997; Thorsgard et al. 2013 cited in AECOM 2015).

Native groups subsisted primarily on salmon and supplemented their diet with seasonal plant and animal resources, including berries, camas, wapato, deer, elk, bear, and waterfowl. Tribes seasonally fished and gathered roots along the Longview waterfront (Nisbet 2003:127 cited in AECOM 2015) and fishing camps were temporarily inhabited along the Columbia River (Minor 1983:72–73 cited in AECOM 2015). Houses and longhouses constructed from cedar planks were built along the Columbia River and its tributaries. Funeral customs along the lower Columbia River included the placement of the deceased in canoes elevated on trees or posts (Boyd 2013:196 cited in AECOM 2015). Graveyards were commonly located on islands or plots located near the river (Ray 1938:75 cited in AECOM 2015).

One such burial location in the vicinity of the study area was Mount Coffin. Called *Yee-eh-mas-tee*, Mount Coffin was a 240-foot-high knoll composed of volcanic rock situated on the north bank of the Columbia River (Thorsgard et al. 2013; Moulton 1990:29-30). The site is commonly confused with “Coffin Rock,” a physically similar landform located about 7 miles upriver. Mount Coffin was a prominent navigational feature on the Columbia River and even more significant as a distinctive burial site, which remains important to Native American tribes in the region. Beginning circa 1906 and continuing through the 1950s, quarrying of Mount Coffin’s volcanic rock gradually reduced the landform in size until it was removed entirely.

Contact with European Americans prompted rapid change to traditional life among Native Americans. Disease devastated native populations and large groups of European-American settlers and homesteaders entering the region supplanted the local indigenous communities. The U.S. government entered into treaties with local Native Americans during the 1850s. Chinookan Cathlamet peoples, including the Skilloot, were signatories to a treaty that ceded their lands in 1851. Along with several other Lower and Middle Chinook groups, many eventually relocated to the Grand Ronde Reservation (Lewis 2013; Ruby and Brown 1992:12, 25, 208, both cited in AECOM 2015). Non-reservation Cathlamets combined with other tribes into the Chinook Nation in 1951 to file a claim with the Indian Claims Commission; the Chinook Nation continues to apply for federal recognition (Fisher and Jette 2013; Ruby and Brown 1992:2, both cited in AECOM 2015). The Cowlitz Tribe attended the Chehalis River Treaty Council in 1855 but did not sign a treaty because a reservation in their territory was not offered (Ruby and Brown 1992:70-71 cited in AECOM 2015). Some removed to the Chehalis Reservation after 1864, and others continued to reside in the Longview area (Weber, Denni, and Maxey 2012:25 cited in AECOM 2015). Local Cowlitz maintained an independent organization that became federally recognized as an Indian tribal government in 2000 (Hajda 1990:514–515 cited in AECOM 2015).

Historic Context

The first nonnative group to visit the region was a 1792 British expedition led by Lieutenant Broughton under the command of George Vancouver. This group explored the Columbia River from its mouth to the Sandy River (Mockford 2005:552 cited in AECOM 2015). Other later explorers included Hudson’s Bay Company fur traders and members of the 1805–1806 Lewis and Clark expedition (Nisbet 2003 cited in AECOM 2015). Intensive settlement of the territory by European Americans began following passage of the Donation Land Act of 1850. During this period, Oregon Trail emigrants settled along the Columbia River near what later became the City of Longview.

These early pioneers established the communities of Monticello (or Mount Solo) on the present site of Longview in 1850, the town of Mount Coffin (named after the prominent landform on the Columbia River; later renamed LaDu), and a settlement near what is now Barlow Point.

The property in the study area was eventually acquired and developed for industrial uses beginning in the early 20th century. The Star Sand and Gravel Company of Portland began quarrying rock from Mount Coffin east of the study area in 1906 and the Long-Bell Lumber Company established a large lumber mill in this same area in the 1920s. North of the study area, the Long-Bell Lumber Company also established the town of Longview as a planned community to support its operations. Considered the world's largest mill at the time, construction of the 2,000-acre mill changed the character of the Columbia River waterway by replacing its agricultural farms with a new industrial setting (Ramsey 1978:169-171, 196 cited in AECOM 2015).

As part of this construction, the Long-Bell Lumber Company built 15 miles of levee to protect its operations from flooding (McClary 2008 cited in AECOM 2015). Settlers had previously constructed dikes to protect the Columbia River's low-lying valley lands as early as the 1890s. In 1894, a record-setting flood led to the passage of legislation enabling the formation of diking and drainage districts. Diking District No.1 was created in 1911 to minimize seasonal and event-level floods and was the first flood management district in Cowlitz County (Erlich 2008:10-11 cited in AECOM 2015). The district constructed a levee near the study area in 1913 (Wilt 1972 cited in AECOM 2015).

Rapidly increasing industrial, commercial, and residential growth generated the need for a uniform stormwater management and flood-protection program in the early 1920s. As a result, six diking districts were combined to form the Consolidated Diking Improvement District (CDID) #1 in 1923. The Long-Bell Lumber Company worked with CDID #1 to enlarge and expand the area's existing system of dikes to protect the company's mill and town sites (Erlich 2008:11; McClelland 1976:20 both cited in AECOM 2015). CDID #1 and the Corps raised the levees in 1949 with additional improvements in later years to better facilitate stormwater removal and accommodate new developments (CDID #1 2013 cited in AECOM 2015).

No development is known to have occurred within the study area prior to the 1940s, except for the levees and diking improvements. In 1929, the Weyerhaeuser Timber Company built its sawmill on a 700-acre site east of the study area, between it and the Long-Bell Company mill. However, the study area itself remained primarily agricultural until the construction of the former Reynolds facility in the study area, beginning in the early 1940s.

In 1941, the Reynolds Metals Company established a new aluminum reduction plant on 400 acres of riverfront property west of the Long-Bell Lumber Company, acquired from the Long-Bell Lumber Company. The new facility benefited from rail and water transportation access, an abundance of wood for fuel and facility construction, and major hydroelectric power provided by BPA along the Columbia River (McClary 2008; Donovan and Associates 2013:2, both cited in AECOM 2015). The Reynolds Metal Company entered into a 20-year contract with BPA for 40,000 kilowatts of power to serve the facility (Bonneville Power Administration 1953:3 cited in AECOM 2015).

The Reynolds Metals Company completed construction of its Longview plant in November 1942. The plant was designed as a duplicate of the company's older aluminum plant in Listerhill, Alabama, and primarily consisted of those structures built in the South Plant area. The consulting engineer for the plant's construction was the J. E. Sirrine & Company of Granville, South Carolina and the builder was Austin & Company of Seattle, Washington. To prepare the property for construction of the new plant, the Reynolds Metals Company placed extensive amounts of fill behind the existing river levees

to raise the property's elevation from between 5 and 10 feet to a level surface across the site (Bechtel Engineering 1968 cited in AECOM 2015).

The now-former Reynolds facility was one of five Pacific Northwest aluminum plants constructed before and during World War II. Aluminum was an important component of shipbuilding during World War II, and these plants supplied large quantities of the metal to the Kaiser Shipyards in Portland, Oregon, and Vancouver, Washington, in addition to many other wartime production facilities throughout the region (Oregon Blue Book 2014 cited in AECOM 2015). Four additional aluminum-reduction plants were built in the Pacific Northwest during the postwar period. Only two plants are still actively used for aluminum reduction today.

Following World War II, the aluminum industry grew rapidly in the 1950s and 1960s with the introduction of innovative new products and rising consumer demand. To accommodate this growth, the Reynolds Metals Company "modernized" its Longview plant. The company expanded its existing production lines in the South Plant in the early 1950s and further increased the plant's capacity in the late 1960s by expanding and altering the existing plant and constructing additional facilities at the property's western end. These improvements more than doubled the Longview plant's production capacity by 1969, making it the third largest employer in Cowlitz County and one of the largest aluminum manufacturers in the Pacific Northwest (Weber, Denni, and Maxey 2012:84 cited in AECOM 2015).

Over the next 30 years, the aluminum industry gradually declined in the Pacific Northwest. The Reynolds Metals Company continued operations at its Longview plant until 2000, when it was purchased by Alcoa, Inc. as a wholly owned subsidiary. Alcoa operated the plant through 2001. Thereafter, the property was owned and operated by several companies and investment groups until it was fully decommissioned by Chinook Ventures, Inc. in 2005. This company sold the plant's assets to the Applicant in January 2011 (Donovan and Associates 2013:3 cited in AECOM 2015).

4.4.4.2 Archaeological Resources

This section describes the results of archaeological investigations within the study area, including previous and current archaeological surveys and geotechnical monitoring conducted for the On-Site Alternative.

Archaeological Surveys

No previously recorded archaeological sites are known to exist within or in the immediate vicinity of the study area. The pedestrian archaeological surveys conducted in January 2015, identified eight landscape features in the study area, which were newly documented as archaeological sites. These eight documented sites consist of three landfills, four fill deposits, and the area of the former South Plant. All eight sites were associated with the former Reynolds facility. Seven were determined to be 45 years of age or older. Of these, six were found to retain good integrity. These six sites were determined eligible for listing in the NRHP as contributing elements of a NRHP-eligible historic district encompassing the former Reynolds facility.

The South Plant area and one landfill were determined not eligible for listing in the NRHP. The landfill was found to be less than 45 years of age. The South Plant area consists of recently demolished resources that no longer retained sufficient integrity to convey historical significance. Demolition of the resources in the South Plant area had previously occurred as a separate, unrelated project.

Geotechnical Investigations

No archaeological resources were identified as a result of the geotechnical investigations. Observations made during the investigations generally correlated with the results of previous geotechnical work in the study area. These studies indicated much of the study area was likely a stable, low-lying wetland prior to the relatively recent filling and industrial development, and possibly had been in this condition for thousands of years. The results were also consistent with historical General Land Office and USGS maps showing past landforms in the study area.

Fill materials were found to extend across the study area in depths of about 5 to 10 feet and overlying native alluvial sediments. Most or all of the alluvium observed during the geotechnical investigations was determined to be from the Holocene epoch with no substantial soil development, reaching depths of up to 70 feet. The Holocene alluvium was interpreted to have accumulated in channel, near-channel, or floodplain environments that would have been perennially or seasonally saturated, such as in a low-lying wetland. This conclusion was substantiated by the characteristic features of the soils.

Five samples of organic debris and tephra recovered during the geotechnical investigations were submitted for chronological dating to better understand landform formation in the study area. The chronological dates of these samples helped establish the overall pattern of depth, character, and thickness of alluvial sediments within the study area.

4.4.4.3 Historic Resources

The historic resources survey identified four built environment resources in the study area. These resources are the former Reynolds facility, the CDID #1 levee, the BPA Longview Substation, and the Reynolds Federal Credit Union. The Lewis and Clark National Historic Trail, which is a nationally significant trail that traverses the study area, was also considered.

Reynolds Metals Reduction Plant Historic District

The former Reynolds facility was evaluated as a historic district and documented on an NRHP nomination form as part of the concurrent Section 106 review undertaken by the Corps (Gratrek et al. 2015). Referred to as the Reynolds Metals Reduction Plant Historic District, the property was determined eligible for listing in the NRHP through this process as a historic district under NRHP Criteria A and C.³ Under Criterion A, the historic district's buildings and structures are associated with the aluminum industry's major growth periods during World War II and through the 1960s. Under Criterion C, the former Reynolds facility represents the aluminum industry's development in the Pacific Northwest and conveys its trend toward functional integration that occurred between World War II and the 1960s, which led to combining the reduction process with product

³ The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of significant persons in our past; or
- C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. That have yielded or may be likely to yield, information important in history or prehistory.

manufacturing. The Reynolds Metals Reduction Plant Historic District consists of 53 separate resources, including 33 buildings, 12 structures, and eight landscape features (recorded as the aforementioned archaeological sites). Of these 53 identified resources, 39 were determined to contribute to the historic district's significance. Fourteen resources were determined to be noncontributing elements to the historic district because their construction postdates the historic district's period of significance or they have been heavily altered.

CDID #1 Levee and the BPA Longview Substation

The CDID #1 levee and the BPA Longview Substation were both determined to be contributors to the Reynolds Metals Reduction Plant Historic District and individually eligible for listing in the NRHP.

Lewis and Clark National Historic Trail

The portion of the Lewis and Clark National Historic Trail that traverses the study area is known as the Lower Columbia River Water Trail. No individual sites associated with the Lewis and Clark National Historic Trail were identified in the study area. The National Park Service is currently identifying high potential historic sites and high potential route segments along the trail; however, this list has not been released to the public (Gladstone 2014 cited in AECOM 2015). Because of the significant industrial development along on the north side of the Columbia River, it is unlikely landscape features in or near the study area would contribute to the significance of the Lewis and Clark National Historic Trail.

Other Historic Resources

The Reynolds Federal Credit Union building was evaluated as not eligible for listing in the NRHP. Outside the study area, the nearest recorded historic properties are the J. D. Tennant house, or Rutherglen Mansion and the Longview-Allston No. 1, No. 2, and No. 3 Transmission Lines. The J. D. Tennant house is approximately 0.5 mile north of the study area at the base of Mount Solo and is listed in the NRHP. The Longview-Allston Transmission Lines are approximately 0.3 mile northeast of the study area and were recommended by BPA as contributing segments of the BPA Transmission System, which is listed in the NRHP under a Multiple Property Documentation Form (Perkins 2015; Kramer 2015). Two cemeteries are also located on Mount Solo about 0.5 mile north of the study area: Longview Memorial Park Cemetery and Mount Solo Cemetery.

4.4.4.4 Culturally Significant Properties

No culturally significant properties were identified within the study area. Outside the study area, four ethnographic sites are known to exist within several miles of the study area close to the Columbia River: three Native American village locations and the site of Mount Coffin. The latter is significant to the Confederated Tribes of the Grand Ronde Community of Oregon and has been identified as traditional cultural property eligible for listing in the NRHP. Although other areas of ethnographic significance may be located near the study area, they do not appear to be documented in the available literature.

4.4.5 Impacts

This section describes the potential direct and indirect impacts related to cultural resources from construction and operation of the proposed export terminal.

4.4.5.1 On-Site Alternative

This section describes the potential impacts in the study area as a result of construction and operation of the proposed export terminal at the On-Site Alternative location.

Construction—Direct Impacts

Construction of the On-Site Alternative would occur adjacent to the current shoreline and include dredging and in-water construction of Docks 2 and 3 in the Columbia River. This work would demolish 30 out of 39 of the identified resources in the study area that contribute to the historical significance of the Reynolds Metals Reduction Plant Historic District. The On-Site Alternative, therefore, would adversely affect cultural resources through the demolition of buildings and structures that contribute to the Reynolds Metals Reduction Plant Historic District. The anticipated adverse impacts on these resources would diminish the integrity of design, setting, materials, workmanship, feeling, and association that make the historic district eligible for listing in the NRHP. If the proposed terminal is constructed, the Reynolds Metals Reduction Plant Historic District would no longer be eligible for listing in the NRHP.

The demolition of buildings and structures associated with the former Reynolds facility could affect the CDID #1 levee and the BPA Longview Substation. These resources have been determined eligible for listing in the NRHP, both individually and as contributing elements of the Reynolds Metals Reduction Plant Historic District. The resources' integrity of setting and association would be diminished by the demolition of buildings and structures that contribute to the Reynolds Metals Reduction Plant Historic District, because the historic district would no longer be eligible for listing in the NRHP. Despite these impacts, the CDID #1 and BPA Longview Substation would remain individually eligible for listing in the NRHP.

The J. D. Tennant House is located on a terrace of Mount Solo about 0.5 mile north of the study area. This property is listed in the NRHP. The J. D. Tennant House, however, was oriented to face the former Long-Bell Lumber Mill (now Weyerhaeuser property), and is most closely associated with the lumber mill. The former Reynolds facility did not exist when the house was constructed. Although the J. D. Tennant House may have a view of the southeast corner of the project area, no adverse impacts are anticipated.

The On-Site Alternative would also involve the extension of dock supports and/or conveyors over the CDID #1 levee and the construction of support structure on either side of the levee. Impacts from these activities are expected to be minimal and would not diminish the levee's integrity as a flood control structure. Construction activities near the BPA Longview Substation would not affect its physical integrity and would remain functional.

Because the project area landward of the levee consists largely of fill material that deeply covers a historic low-lying wetland, there is limited potential to encounter undocumented archaeological sites. However, as described in Chapter 3, *Alternatives*, construction of the On-Site Alternative would require surface grading, compaction to a depth of approximately 25 feet, and pile-driving to a depth of approximately 70 feet. Based on the results of the geotechnical investigations conducted in and

near the project area, archaeological resources could exist in native soil below the existing fill. Geotechnical investigations indicated the depths of fill in the study area typically range from 5 to 10 feet below the existing surface. The only impacts expected to extend below this depth are the compaction/displacement impacts and installation of deep piles associated with the coal stockpiling development area; neither activity would yield sediment for observation. An Inadvertant Discovery Plan would address the discovery of any previously unidentified archaeological resource during construction.⁴

Construction—Indirect Impacts

Construction of the proposed export terminal at the On-Site Alternative location would not result in any indirect impacts on cultural resources because construction would be limited to the project area.

Operations—Direct Impacts

Routine operation and maintenance of the proposed export terminal are not expected to affect cultural resources in the study area. Remaining portions of the Reynolds Metals Reduction Plant Historic District would likely no longer be eligible for listing in the NRHP, due to a loss of integrity caused by the removal. The CDID #1 levee and BPA Longview Substation, meanwhile, would remain individually eligible for listing in the NRHP.

Archaeological resources in the project area discovered during construction could be vulnerable to inadvertent disturbance during routine operations and maintenance. If previously undocumented archaeological resources are encountered in the project area during routine operations, they would be addressed through implementation of an Inadvertant Discovery Plan.

Portions of the Lewis and Clark National Historic Trail are within the study area; however, these portions of the trail do not retain historic integrity. The features present during the Lewis and Clark expedition have been significantly modified by existing industrial development.

Operations—Indirect Impacts

Operation of the proposed export terminal at the On-Site Alternative location would not result in any indirect impacts on cultural resources in the study area.

4.4.5.2 Off-Site Alternative

This section describes the potential impacts in the study area as a result of constructing and operating the proposed export terminal at the Off-Site Alternative location.

Construction—Direct Impacts

Construction-related activities associated with the Off-Site Alternative could result in direct impacts as described below. The Off-Site Alternative would not involve the demolition of existing buildings or structures, but would construct an additional access road and rail line extension, and would require a greater amount of dredging and dock construction.

⁴ An Inadvertant Discovery Plan (sometimes referred to as an Unanticipated Discovery Plan) outlines procedures to be followed if previously unknown archaeological or historical resources are discovered during project activities.

Construction of the Off-Site Alternative would be similar to the On-Site Alternative. It would occur adjacent to the current shoreline and include dredging and in-water construction of two docks (Docks A and B) in the Columbia River. No historic structures are present in the project area.

The Off-Site Alternative would also involve extending dock supports and/or conveyors over the CDID #1 levee and constructing support structures on either side of the resource. Impacts from these activities are expected to be minimal and would not diminish the levee's integrity as a flood control structure.

The J. D. Tennant House is located on a terrace of Mount Solo about 1.0 mile northeast of the Off-Site Alternative project area. The resource is outside the study area and beyond the view of the Off-Site Alternative. Therefore, no adverse impacts are anticipated.

The Off-Site Alternative would be visible from the Longview-Allston Transmission Lines No. 1, No. 2, and No. 3 and the Longview Memorial Park and Mount Solo Cemeteries, which are outside the study area. No adverse impacts are anticipated on any of these resources due to their distance from the Off-Site Alternative project area and the character of other development that already exists in the vicinity.

An archaeological survey has not been conducted at the Off-Site Alternative project area and there are no known sites listed. However, for the same reasons as those discussed for the On-Site Alternative it is possible construction of the Off-Site Alternative could inadvertently affect yet unidentified archaeological resources during construction. The Off-Site Alternative would not affect the fill deposits and landfills documented as archaeological sites, associated with the Reynolds Metals Reduction Plant Historic District.

Similar to the On-Site Alternative, construction of the Off-Site Alternative would require surface grading, compaction to a depth of approximately 25 feet, and pile-driving to a depth of approximately 70 feet. Because of the Off-Site Alternative project area's lack of prior development, its proximity to the Columbia River, and the results of the archaeological and geotechnical investigations conducted for the On-Site Alternative, the probability for archaeological resources to exist at the Off-Site Alternative project area is considered high. Archaeological investigations and deep testing would be required prior to construction to determine whether the Off-Site Alternative would affect archaeological resources, and an Inadvertant Discovery Plan would be developed to address any discovery of previously unidentified archaeological resources during construction.

Construction—Indirect Impacts

Construction of the proposed export terminal at the Off-Site Alternative location would not result in any indirect impacts on cultural resources because construction would be limited to the project area.

Operations—Direct Impacts

Direct impacts resulting from the operation of the proposed export terminal at the Off-Site Alternative location would be the same as those for the On-Site Alternative, except demolition of portions of the Reynolds Metals Reduction Plant Historic District would not occur.

Operations—Indirect Impacts

Indirect impacts resulting from the operation of the proposed export terminal at the Off-Site Alternative location would be the same as those for the On-Site Alternative.

4.4.5.3 No-Action Alternative

Under the No-Action Alternative, the Corps would not issue a Department of the Army permit authorizing construction and operation of the proposed export terminal. As a result, impacts resulting from constructing and operating the terminal would not occur. In addition, not constructing the terminal would likely lead to expansion of the adjacent bulk product business onto the export terminal project area. This new industrial development would be subject to environmental review and substantive regulatory approvals, including building demolition, and/or expanded industrial operations and the construction of upland facilities related to such potential operations. Such development could result in impacts similar to those described previously for the On-Site Alternative.

4.4.6 Required Permits

Federal permits would be required from the Corps for the proposed export terminal. A decision on whether to issue or deny a Department of the Army permit would be a federal undertaking subject to the requirements of NEPA and Section 106 of the NHPA. In compliance with Section 106 of the NHPA, the Corps has initiated consultation as described in Section 4.4.3.3, *Agency and Tribal Consultation*.

Based on the outcome of the Section 106 consultation process, the Applicant would be required to comply with the provisions of the Memorandum of Agreement to resolve potential adverse effects of the terminal.

An Inadvertant Discovery Plan would address any discovery of previously unidentified archaeological resources during construction. An Inadvertant Discovery Plan would require work to immediately stop in the vicinity of a discovery and notify the Corps and Cowlitz County.

4.5 Tribal Treaty Rights and Trust Responsibilities

This section identifies the original Indian tribes occupying the study area, the vehicle for establishing reservations and treaty reserved rights, highlights of traditional tribal cultures and territories, and the potential impacts on tribal resources. Not all of the original tribes, however, became treaty tribes with lands protected by specific rights and privileges or received federal recognition through other legal means.

For the purposes of this Draft Environmental Impact Statement (Draft EIS), *tribal resources* refers to tribal fishing, hunting and gathering practices, including access to traditional areas associated with a tribe's sovereignty or treaty rights. These resources may include plants, animals, or fish used for commercial, subsistence, and ceremonial purposes.

4.5.1 Regulatory Setting

This section presents the tribal authorities within the study area, as well as relevant laws and regulations pertaining to the tribes and tribal resources.

4.5.1.1 Tribal Authorities

Tribal authorities pertinent to the study area include, but are not limited to, the following.

- **Ratified federal treaties.** Ratified federal treaties refers to formal agreements between the federal government and Native American tribes under Article II, Section 2 of the United States Constitution approved by the president and subsequently ratified by the United States Senate. A treaty is a constitutionally recognized agreement between sovereign nations. These legally binding agreements are protected under the United States Constitution, which states, like the United States Constitution, they are the “supreme law of the land.” Under these treaties, tribes ceded millions of acres of land while reserving certain rights such as fishing, hunting, and gathering, as well as rights to determine use of reserved land and its resources. Treaties have been ratified with the Confederated Tribes and Bands of the Yakama Nation (Yakama Nation), Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of Warm Springs, and Nez Perce Tribe.
- **Treaty tribes.** A Native American tribe that formally negotiated a treaty with the United States government between 1778 and 1871, which was subsequently ratified by the United States Senate, is known as a treaty tribe. As federally recognized tribes, treaty tribes retain a sovereign status and maintain a government-to-government relationship with the United States. The treaties obligate the federal government to protect tribal treaty rights, lands, assets, and resources—commonly referred to as a trust obligation.
- **Reserved tribal treaty rights.** Reserved tribal treaty rights refer to preexisting rights of indigenous peoples that were reserved by a treaty to continue their traditional access and harvest of natural resources on Indian reservations, and off-reservation “open and unclaimed” lands in common with other citizens. Today “open and unclaimed” lands refer to most state and federal public lands, but not private lands, or lands unsuited for hunting, gathering, or fishing activities. In some treaties, notable here, the Yakama Nation, Confederated Tribes of the Umatilla

Indian Reservation, Confederated Tribes of Warm Springs, and Nez Perce Tribe, the treaty tribes, also reserved their right to take fish at usual and accustomed stations.

- **Unratified federal treaties.** Unratified federal treaties are treaties negotiated but not ratified by the United States Senate. Unratified treaties were negotiated with Chinook, Clatsop, Clackamas, Tillamook, Umpqua, Siletz, and Rogue River Tribes of the Oregon-Washington coast and other groups who established claims against the government for wrongful taking of their lands. Reservations established on the Oregon coast were all terminated by United States Congress, House Resolution No.108 in 1954, and took effect in 1956. Executive Order reservations since then have been restored at Grand Ronde and Siletz in Oregon. Chinookan tribes formerly occupied the study area before the major malaria epidemic of 1829 to 1833 (Boyd 1998; Nisbet 2009:200), and retain historical and traditional connections to the lower Columbia River.
- **Treaty tribal ceded lands.** Treaty tribal ceded lands are former tribal territories taken by treaty, whether or not ratified by United States Congress. Some claims made by tribes remain unawarded, requiring their recognition as a federally recognized Indian tribe to fulfill these claims.
- **U.S. Department of the Interior Office of Federal Recognition.** The U.S. Department of the Interior Office of Federal Recognition sets up a process and review for unrecognized Indian tribes and communities to gain federal recognition. This is important in order for a tribe to be recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians. This status is automatically conferred on members of treaty tribes, but does not automatically designate Indian communities that were not treaty signers, or who lost their lands and social-cultural identity because they were struggling for their own survival and tribal social-cultural integrity over the past 150 years. Those communities each must apply for, and be granted, this status to be listed as a federally recognized tribe. Both the Cowlitz Indian Tribe and the Confederated Tribes of Grand Ronde are federally recognized tribes. The Chinook Indian Nation is based in Bay Center, Washington, and is petitioning for federal recognition.

4.5.1.2 Laws and Regulations

Laws and regulations relevant to treaty rights for federally recognized tribes are summarized in Table 4.5-1.

Table 4.5-1. Laws, Regulations, and Treaty Rights for Federally Recognized Tribes

Laws, Regulations, Court Cases, and Treaties	Description
United States Constitution (1787)	Article II and Article VI. Authorizes the federal government to make treaties and regulate commerce with Indian tribes.
Treaty With The Yakama (1855)	Set aside reservation land and reserve fishing, gathering and hunting rights for the Confederated Tribes and Bands of the Yakama Nation.
Treaty with the Walla Walla, Cayuse, etc. (1855)	Set aside reservation land and reserve fishing, gathering and hunting, and pasturing rights for the Confederated Tribes of the Umatilla Indian Reservation.
Treaty with the Nez Perce (1855)	Set aside reservation land and reserve fishing, gathering and hunting rights for the Nez Perce Tribe.

Laws, Regulations, Court Cases, and Treaties	Description
Treaty with the Tribes of Middle Oregon (1855)	Set aside reservation land and reserve fishing, gathering and hunting for the Confederated Tribes of Warm Springs.
Rivers and Harbors Act of 1945 (Pub. L. 79-14)	Appropriates funding for the acquisition of “In-Lieu-” sites to replace the Usual and Accustomed fishing sites inundated by the construction of Bonneville Dam. Five sites were acquired.
Endangered Species Act of 1973 (16 USC 1531 <i>et seq.</i>)	NMFS is responsible for managing, conserving, and protecting ESA-listed marine and anadromous species. Actions affecting ESA-listed fishery species are subject to review by NOAA Fisheries for compliance with the Endangered Species Act.
Columbia River Treaty Fishing Access Pub. L. No. 100-581, 102 Stat. 2944 (1988)	Federal lands acquired by the Secretary of the Army and transferred to the Secretary of the Interior to be administered to provide access to usual and accustomed fishing areas and ancillary fishing facilities on the Columbia River.
DoD American Indian and Alaska Native Policy (1998)	Instructs DoD interactions with federally recognized tribes based on tribal input, federal policy, treaties, and federal statutes, and supports tribal self-governance and government-to-government relations between the federal government and tribes.
Army Regulation 200-1 (2007)	Regulates environmental protection and enhancement, including stewardship of natural and cultural resources.
Presidential Memorandum, Tribal Consultation (2009)	Reaffirms Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (65 FR 67249) and charges executive departments and agencies with engaging in consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications.
USACE Tribal Policy Principals (1998 and 2010)	Affirms the Corps’ legal responsibility to engage in pre-decisional consultation with federally recognized Tribes.
Notes: NMFS = National Marine Fisheries Service; ESA = Endangered Species Act; NOAA = National Oceanic and Atmospheric Administration; v = versus; BPA = Bonneville Power Administration; Corps = U.S. Army Corps of Engineers, Reclamation = U.S. Bureau of Reclamation; BiOp = Biological Opinion; FR = <i>Federal Register</i>	

4.5.2 Study Area

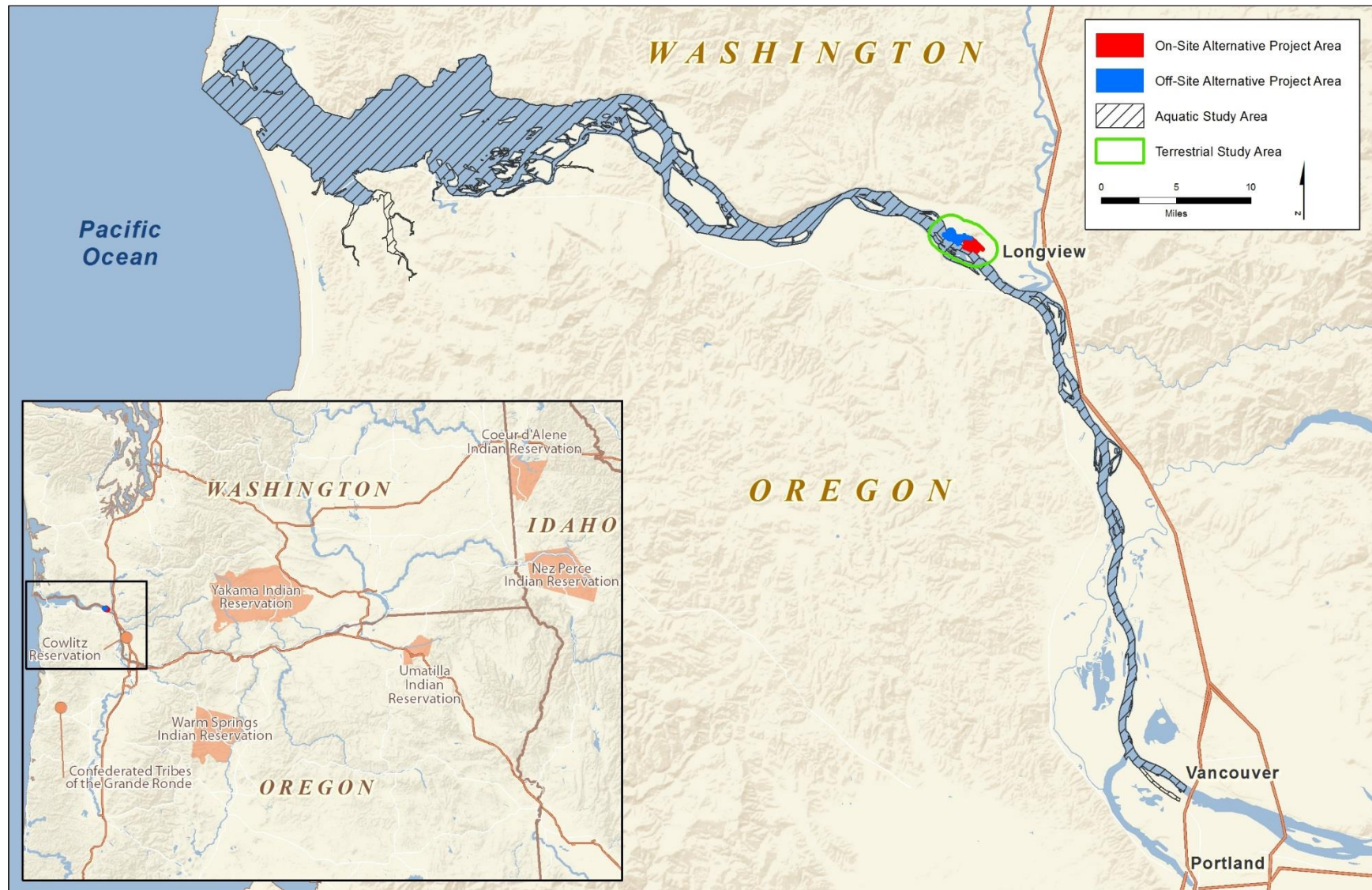
The study area for this EIS focuses on treaty tribes, and federally recognized tribes. The primary focus is reserved tribal treaty rights, including fishing, hunting, and food gathering rights not limited to accessing usual and accustomed stations and/or places.

The geographic extent of the study area is represented by the compilation of the various study areas for the areas of concern (Figure 4.5-1). Different study areas for direct and indirect impacts have not been identified as either impacts could affect treaty resources. The environmental resources discussed in Chapter 5, *Natural Environment: Affected Environment and Project Impacts*, provide more detail about the individual study areas.

- Fishing sites.** The study area for fishing sites mirrors the study area for the vessel analysis and includes the area surrounding the proposed docks where vessel maneuvering and loading would occur and the waterways used by, or could be affected by vessels calling at the project

areas. It also includes the lower Columbia River from the mouth of the river upstream to Vancouver, Washington, and the Willamette River upriver to the Port of Portland.

- **Fish and fish habitat.** The study area for impacts on fish and fish habitat includes the vicinity of the proposed export terminal where the noise from construction or operation could affect fish, plus the area of the Columbia River extending downriver from the project area to the landward line of the territorial sea (i.e., a line between the western-most end of the north and south jetties), from here on referred to as the mouth of the Columbia River. This study area includes shallow-sloping beaches along the river on which fish could be stranded by the wakes of passing vessels.
- **Vegetation.** The study area for impacts on vegetation is the project area and the area around the project area for a distance of 1 mile.
- **Wildlife.** Two study areas have been identified for the wildlife analysis:
 - *Terrestrial species and habitats.* The study area for terrestrial species consists of the project area, the area extending up to 0.5 mile beyond the project area, and the lands in the vicinity where project-related disturbance to wildlife and habitat could occur.
 - *Aquatic species and habitats.* The study area for impacts on aquatic wildlife species and habitats includes the main channel of the Columbia River and extends approximately 5.1 miles upriver and downriver to the mouth of the Columbia River to address potential impacts of increased vessel traffic on aquatic species and habitat in the lower Columbia River.
- **Water quality.** The study area for impacts on water quality is the project area, an area extending 300 feet from the project area into the Columbia River, the Consolidated Diking Improvement District (CDID) #1 stormwater system drainage ditches adjacent to the project area, the Columbia River up to 1 mile downstream of the project area, and potential in-river dredged material disposal sites plus an area extending 300 feet downstream of each disposal site.

Figure 4.5-1. Tribal Treaty Rights Study Area

4.5.3 Methods

This section describes the sources of information and methods used to evaluate the potential impacts on tribal resources associated with the construction and operation of the proposed export terminal.

4.5.3.1 Information Sources

The information presented in this section is based on the following materials.

- Review of legal authorities regarding tribal recognition, federal status, and comment by Indian tribes and individuals submitted during the formal scoping comment period for this Draft EIS.
- Technical reports of regional professional archaeological, historical, and ethnographic papers, articles, and monographs available as professional literature from regional university libraries and the records of the Washington Department of Archaeology and Historic Preservation (DAHP) in Olympia, Washington. Many of these reports and records are confidential or proprietary and not for public disclosure (per the Archaeological Resources Protection Act of 1979, National Historic Preservation Act of 1966, and Native American Graves Protection and Repatriation Act).
- Primary and secondary resources from local repositories, including the Cowlitz County Historical Museum.
- Historic maps, including U.S. Geological Survey (USGS) General Land Office plat maps and topographic quadrangle maps.
- Columbia River treaties.
- Oregon Department of Environmental Quality Columbia River water quality budget testimony by Louis Pitt, Jr., Director of Government Affairs, Confederated Tribes of Warm Springs Reservation of Oregon, March 25, 2015.
- Information about Columbia River Treaty Tribes and Columbia River fishing sites (Columbia River Inter-Tribal Fish Commission 2015; Broncheau pers. comm.).
- Biological information based on provisions of the federal Endangered Species Act (ESA) pertaining to species of tribal interest.
- Risk analysis information regarding Columbia River water quality for Indian treaty fishing and fish harvest as essential subsistence to treaty and non-treaty tribes.

Additional Information for this section was also extracted from the following technical reports prepared for this Draft EIS.

- *Identification of Historic Properties: Existing Information and Proposed Research, Millennium Coal Export Terminal, Cowlitz County, Washington—June 19, 2015* (AECOM 2015a)
- *Identification of Historic Properties: Existing Information and Proposed Research, Millennium Coal Export Terminal, Cowlitz County, Washington—August 18, 2015* (AECOM 2015b)
- *Historic and Cultural Resources Assessment, Millennium Coal Export Terminal, Cowlitz County, Washington—October 1, 2015* (AECOM 2015c)

- *Off-Site Alternative – Barlow Point Historic and Cultural Resources Assessment—April 22, 2016* (AECOM 2016)
- *NEPA Fish Technical Report* (ICF International 2016a)
- *NEPA Vegetation Technical Report* (ICF International 2016b)
- *NEPA Water Quality Technical Report* (ICF International 2016c)
- *NEPA Wildlife Technical Report* (ICF International 2016d)

4.5.3.2 Government-to-Government Consultation

As lead federal agency, the U.S. Army Corps of Engineers (Corps) has initiated consultation with potentially affected Indian tribes. The Corps will continue to consult with the tribes to identify those aspects of the proposed export terminal having the potential to significantly affect protected tribal resources, tribal rights, and Indian lands. Consultation is also occurring under Section 106 of the National Historic Preservation Act on historic properties and any properties of traditional religious and cultural importance to determine whether these properties would be potentially affected by the proposed export terminal (Section 4.4, *Cultural Resources*).

4.5.4 Affected Environment

This section describes the tribes and tribal resources in the study areas that could be affected by construction and operation of the proposed export terminal. This section also provides the general context for tribal resources in the study areas and describes tribal resources near the study area.

4.5.4.1 Northwest Indian Treaties and Federally Recognized Tribes

Northwest Indian Treaties and Federally Recognized Tribes for the study area include various tribal groups who used the Longview waterfront from historical to contemporary times. The ethnographic and archaeological records support a long and intensive record of habitation along the Columbia River in the Longview area, and are summarized in Section 4.4, *Cultural Resources*.

The study area is located within the territory occupied at the time of Euroamerican contact by two Indian groups, the Cathlamet and Upper Chinookan-speaking people, and the Cowlitz, a Salish-speaking group. From 1806 to 1829, the Skilloot, a subset of the Chinookan Cathlamet, resided along both sides of the Columbia River between Oak Point to the west and just above the Cowlitz River to the southeast (Lewis 2013; Mooney 1894), thus within the proposed export terminal location. The Cowlitz are a Salish-speaking group who also traditionally resided in the Longview area along the Cowlitz River from its mouth to below Mayfield Dam, as well as along segments of the Toutle, Newaukum, and South Fork of the Chehalis Rivers (Gibbs 1877; Curtis 1913; Hajda 1990; Silverstein 1990; Thorsgard et al. 2013). A village was located in the vicinity of the project area and recognized both by Chinookan and Cowlitz informants (Kincade 1997; Thorsgard et al. 2013). Several other villages were located along both banks of the Columbia River near the Cowlitz River confluence and highlight the dense population of the many peoples of the lower Columbia region (AECOM 2015a).

As a result of epidemics brought through contact with non-Indian peoples and reduced populations, many villages located at the mouth of the Cowlitz River that had been occupied by Cathlamet became Cowlitz (Hajda 1990:514). From about 1834 to 1854, abandoned villages along the Longview section of the Columbia River were repopulated by Clatskanie, Cowlitz and Tainapum (Upper Cowlitz) peoples who moved downstream to the Cowlitz River mouth, and Klickitat who

moved into former Skilloot territory along the Lewis River. By the time of the U.S. treaties in 1855, tribes were already affected by Euroamerican contact in terms of adjusted territories and reduced population numbers. Survivors were amalgamated and many local groups subsequently lost their ethnic identities (Minor and Burgess 2009). Many tribal peoples relocated to various reservations, discussed below, while others remained off-reservation in the local area and continued to utilize their ancestral sites of traditional importance.

In 1855, Washington Territorial Governor Isaac Stevens, representing the United States, negotiated treaties with many Indian tribes living in the Pacific Northwest, including those with ancestral ties to the project area. Tribes signing treaties at Territorial Governor Stevens' treaty councils included the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, and the Nez Perce Tribe of Idaho. Oregon Territory Superintendent of Indian Affairs Joel Palmer held a treaty council with the tribes of middle Oregon, negotiated a treaty in 1855, with the Middle Columbia River Tribes establishing the Confederated Tribes of Warm Springs, and provided for a reservation in 1860. Accordingly, these treaty tribes secured both reserved lands to live on, and off-reservation rights for access and subsistence, comprising the collection of fish, game, roots, berries, and forage for their horses.

After 1871, Congress made no further treaties with Indian tribes. Subsequent Indian reservations were generally made by Presidential Executive Order, and land adjustments in Indian lands and allotments were made by acts of Congress. The 1855 treaties with northwest tribes established tribal sovereignty status, and were sustained by the Indian Reorganization Act of 1933, when tribes were offered a road to self-governance.

Not all government-negotiated treaties with the tribes were ratified by Congress, so in the cases of most Oregon coastal tribes and the Chinookan tribes of the lower Columbia River, and the Cowlitz, most of their traditional lands were ceded to the government without compensation, and were not provided with tribal reservations (Zucker et al. 1983).

In Washington State there are 29 federally recognized Indian tribes. The treaty tribes with interest in the study area include the Yakama Nation in Washington, the Confederated Tribes of the Umatilla Indian Reservation and Confederated Tribes of Warm Springs in Oregon, and Nez Perce Tribe in Idaho. These four treaty tribes have reserved treaty rights for commercial, subsistence and ceremonial fishing at usual and accustomed fishing areas in the Columbia River and its tributaries and form the Columbia River Inter-Tribal Fish Commission (CRITFC), a nonfederally recognized tribal organization comprised of individual members of the four treaty tribes. The CRITFC mission is to “coordinate management policy and provide fisheries technical services” to the treaty tribes (Columbia River Inter-Tribal Fish Commission 2015).

The federally recognized tribes closest to the project areas are the Cowlitz Indian Tribe, located in Longview, Washington, and the Confederated Tribes of Grand Ronde on the western Oregon central coast. The Cowlitz Indian Tribe was only recently recognized as an Indian tribe in 2000. The Confederated Tribes of Grand Ronde consists of 27 tribes who received reinstated federal recognition in 1983. Some of the many tribal residents on the Grand Ronde Reservation had ancestors among the Chinookan tribes that once occupied parts of the Columbia River estuary and shoreline upstream to The Dalles, Oregon, including the project areas for the Oni-Site Alternative and Off-Site Alternative.

The following presents an overview of the tribes in the study areas.

Confederated Tribes and Bands of the Yakama Nation

The Yakama Nation is a treaty tribe consisting of 14 bands and tribes including Kah-milt-pah, Klickitat, Klinquit, Kow-was-say-ee, Li-ay-was, Oche-chotes, Palouse, Piquose, Se-ap-cat, Shyiks, Skinpah, Wenatshapam, Wishram, and Yakama. The Yakama Nation reservation is located in south central Washington State and spans across 1.2 million acres. The number of enrolled members as of 2011 was 10,200 (Columbia River Inter-Tribal Fish Commission 2015).

The Yakama Nation along with the United States signed the Treaty with the Yakama on June 9, 1855. This treaty reserved the tribe's exclusive right of taking fish in all the streams running through or bordering the reservation and the right of taking fish at all usual and accustomed places in common with the citizens of the United States.

The Yakama Nation maintains a strong connection to salmon and the Columbia River. Celilo Falls on the Columbia River near The Dalles, Oregon was an important gathering, fishing, and trading place for the tribe before it was inundated in the 1950s.

The Yakama Nation operates a fisheries program to protect their rights reserved by the 1855 Treaty, and to restore the Columbia River corresponding to their culture and traditions. The Yakama Nation Fisheries program includes over 11 subbasins, extending from the Willamette River upstream to the Methow River in the upper Columbia. The Yakama Nation people fish for salmon, steelhead, and sturgeon for commercial, subsistence, and ceremonial purposes. Fishing locations include the mainstem Columbia River from Bonneville Dam to McNary Dam (Zone 6) and the tributaries flowing into the Columbia River on the Washington State side of the river. The Yakama Nation also maintains their right to hunt, gather roots and berries, and pasture their horses on open and unclaimed land on and off reservation.

The Yakama Nation has an interest in the protection and restoration of salmon and steelhead in the upper Cowlitz River. Yakama Nation fishers are not known to fish for salmon in the Cowlitz River. The Yakama Nation Fish and Wildlife Commission does authorize limited fishery openings for smelt for ceremonial or subsistence harvest by tribal members (Yakama Nation 2016).

Confederated Tribes of Grand Ronde

The Confederated Tribes of Grand Ronde is a federally recognized tribe consisting of 27 groups with long historical ties to the northwestern Oregon and southwestern Washington coasts. The community has an 11,040-acre Indian reservation which was established in 1855 in Yamhill and Polk Counties. Confederated Tribes of Grand Ronde became a federally recognized Indian tribe in 1983. The Chinook, Clatsop, Wahkiakum, and Cathlamet are among their original constituent Indian groups, and they formerly occupied the area near the project areas. Their 19th century ceded territories to the United States include lands at the mouth of the Columbia River.

The Confederated Tribes of Grand Ronde has an interest in the study areas regarding historical use of Mount Coffin as a traditional cultural property as discussed in Section 4.4, *Cultural Resources* (Thorsgard et al. 2013, cited in AECOM 2015). The Confederated Tribes of Grand Ronde do not have treaty reserved fishing rights on the Columbia River or in the Cowlitz River. However, they maintain an active interest in protecting and restoring fish and wildlife on their ancestral lands.

Confederated Tribes of the Umatilla Indian Reservation

The Confederated Tribes of the Umatilla Indian Reservation are a treaty tribe consisting of three tribes. These tribes include the Umatilla, Cayuse, and the Walla Walla tribes (Columbia River Inter-Tribal Fish Commission 2015). They are located in northeastern Oregon and have a reservation spanning 172,000 acres. The enrolled population in 2011 was approximately 2,800 tribal members.

The Confederated Tribes of the Umatilla Indian Reservation and United States signed the Treaty with the Walla Walla, Cayuse, etc., on June 9, 1855. This treaty reserved the tribe's exclusive right of taking fish in all streams running through or bordering their reservation and the right for taking fish at all usual and accustomed stations in common with citizens of the United States. Traditionally the Confederated Tribes of the Umatilla Indian Reservation used the land for grazing their horses. They also gathered at hunting camps and to fishing sites to celebrate and trade. Traditional activities included travel to different areas to fish for salmon, to gather roots and berries at higher elevations in the summer and move to the lowlands to hunt in the fall and reside through the winter (Confederated Tribes of the Umatilla Indian Reservation 2015). Celilo Falls was an important fishing and trading area for the tribe.

The Confederated Tribes of the Umatilla Indian Reservation work cooperatively with the Washington Department of Fish and Wildlife (WDFW) to manage fisheries and wildlife. The tribe has focused their fish restoration activities on the Umatilla and Grande Ronde tributaries. In addition to the Columbia River, the tribe has co-management responsibilities for the Snake, Walla Walla, Tucannon, Grande Ronde, John Day, and Imnaha tributaries.

Confederated Tribes of Warm Springs

The Confederated Tribes of Warm Springs is a confederation of treaty tribes in Oregon (Columbia River Inter-Tribal Fish Commission 2015). It consists of the Warm Springs, Wasco, and Paiute tribes, and in 2011, the enrolled population was approximately 5,000 tribal members. The reservation is in Central Oregon and encompasses 640,000 acres. The Confederated Tribes of Warm Springs signed the Treaty with the Tribes of Middle Oregon, 1855 with the United States on June 9, 1855. The treaty reserved the tribe's exclusive right of taking fish at all the stream running through or bordering their reservation and the right of taking fish at usual and accustomed stations in common with citizens of the United States. In addition to fishing the mainstem Columbia River, tribal member's fish with dipnets and nets set with wooden scaffolding on the Deschutes River, a major tributary of the Columbia River, at the falls near Sherar's Bridge (Columbia River Inter-Tribal Fish Commission 2015). The economy of the confederation is based on natural resources, including hydropower, forest products, and ranching, as well as tourism and recreation (Confederated Tribes of Warm Springs 2015). In addition to the Columbia River, the Confederated Tribes of Warm Springs co-manages the Deschutes, Fifteenmile Creek, John Day and Hood River tributaries which are located in Oregon.

Cowlitz Indian Tribe

The Cowlitz Indian Tribe attended a treaty council at Chehalis in 1855, but they did not sign a treaty because the government-proposed reservation did not include lands in their traditional territory. Many Cowlitz moved to the Chehalis Reservation in 1863, or remained at St. Mary's Mission in Centralia, Washington, which supported an upriver Cowlitz tribal community for the next 110 years.

Federal recognition was acknowledged for the Cowlitz Indian Tribe in 2000. The Cowlitz Indian Tribe¹ was officially granted a reservation in Clark County following a court decision in December 2014. The reservation is located approximately 20 miles south of Longview near the Lewis River.

The Cowlitz Indian Tribe does not have treaty reserved fishing rights on the Columbia River or in the Cowlitz River. However, the Cowlitz Indian Tribe has an active interest in protecting and restoring fish and wildlife on their ancestral lands. The Cowlitz Indian Tribe signed a Memorandum of Understanding with WDFW to maintain healthy populations of fish and wildlife in southwest Washington as a common interest for both parties (Memorandum of Understanding n.d.).

In 2014, the Cowlitz Indian Tribe was awarded a grant from the National Oceanic and Atmospheric Administration for a eulachon species recovery program in the Cowlitz River. The Cowlitz Indian Tribe holds smelt, salmon, and river ceremonies on the Cowlitz River and participates with other tribes in canoe journeys on major waterways (Cowlitz Indian Tribe 2015).

Nez Perce Tribe

The Nez Perce Tribe is a treaty tribe inhabiting North Central Idaho (Columbia River Inter-Tribal Fish Commission 2015). Its reservation is 750,000 acres, and the enrolled population in 2011 was approximately 3,500 tribal members. The Nez Perce Tribe call themselves Nimi'ipuu - The People (Columbia River Inter-Tribal Fish Commission 2015). On June 11, 1855, the Nez Perce Tribe signed the Nez Perce Treaty with the United States. This treaty reserved the tribe's exclusive right of taking fish in all the streams running through or bordering the reservation and the right for taking fish in usual and accustomed places in common with citizens of the United States.

The Nez Perce Tribe was a historically nomadic and traveled from the Great Plains to hunt buffalo, to Celilo Falls in the Columbia River Gorge to fish for salmon. Although its reservation is located outside of Washington State, the Nez Perce Tribe retain its reserved right to hunt within the study areas. The Nez Perce Tribe has established the Nez Perce Fish and Wildlife Commission and the Nez Perce Department of Fisheries Resources Management to conserve, enhance, and manage the tribe's natural resources. In addition to the Columbia River, the Nez Perce Tribe has comanagement responsibilities for the Snake, Tucannon, Grande Ronde, Imnaha, Clearwater, and Salmon tributaries.

4.5.4.2 Treaty Fishing Rights

As stated, in 1855, the United States entered into treaties with the Confederated Tribes and Bands of the Yakama Indian Nation, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of Warm Springs, and the Nez Perce Tribe (Treaty Tribes). These treaties were ratified by the United States Senate and, as such, are laws of the United States. In these treaties, the Treaty Tribes reserved, in substantially similar provisions, their historic right to take fish on their respective reservations and off-reservation "at all usual and accustomed [U&A] places."

In 1968, individual Indians and the United States brought separate actions in the Oregon federal district court, in which the Treaty Tribes intervened, concerning the treaty right of taking fish at all U&A places on the Columbia River and its tributaries. The court issued an order in 1969, confirming

¹ The Cowlitz Indian Tribe became a federally recognized tribe on February 14, 2000 (Final Determination, Federal Register Notice, 2000.02.18, 65 FR 8436-8438 and Reconsidered Final Determination, Federal Register Notice, 2002.01.04, 67 FR 607-608).

the validity of the Treaty Tribes' rights under the Treaties. *Sohappy v. Smith*, 302 F. Supp. 899 (D. Or. 1969). The court did not determine specific Columbia River U&A areas.

As encouraged by the district court, the parties signed a Columbia River Management Plan in 1977. The 1977 plan approved by the court did not establish fishing locations, times, or definite quotas. *United States v. Oregon*, 769 F.2d 1410 (9th Cir. 1985). In 1988, the court approved a Columbia River Fish Management Plan among the Treaty Tribes, Oregon, Washington and the United States for Treaty and non-Treaty fishing. *United States v. Oregon*, 699 F. Supp. 1465 (D. Or. 1988), *aff'd*, 913 F.2d 576 (9th Cir. 1990). More recently, relevant parties agreed to, and the court approved, the 2008–2017 *United States v. Oregon Management Agreement* (2008–2017 Agreement). *United States v. Oregon* (Aug. 11, 2008). Under the 2008–2017 Agreement, the Treaty Tribes exercise Columbia River mainstem Treaty fishing rights in Zone 6, which extends from Bonneville Dam to McNary Dam.

The 2008–2017 Agreement also allows Treaty Tribes that have first reached an agreement with Oregon and Washington to take fish in the Columbia River below Bonneville Dam at locations specified in those agreements. Individual Treaty Tribes have entered into several such agreements with Washington and Oregon authorizing their members to take fish at Columbia River locations downstream from Bonneville Dam but upstream from the City of Vancouver. The project areas (at approximately river mile 63) are downstream from the City of Vancouver (approximately river mile 115). As such, harvest of fish by members of the Treaty Tribes under the Treaties is not known to occur in the Columbia River adjacent to or near the project areas.

4.5.4.3 Tribal Resources of Concern

The following discussion focuses on the areas of tribal concern regarding the proposed export terminal include potential impacts on fish, vegetation, wildlife, and water. Detailed information and analyses about these resources can be found in Section 4.4, *Cultural Resources*, and Chapter 5, *Natural Environment: Affected Environment and Project Impacts*, of this Draft EIS.

Fishing Sites

Salmon are central to the spiritual and cultural identity of all Columbia River tribes. Tribal members gather and camp at multiple sites along the Columbia River beginning in May and many stay until fall to harvest salmon and steelhead from the Columbia River and its tributaries (Broncheau pers. comm.).

The Columbia River downstream of McNary Dam is divided into six zones for fisheries management. Zones 1 through 5 are downstream of Bonneville Dam (upper extent is Beacon Rock downstream of Bonneville Dam) and are managed for non-treaty commercial and sport fisheries. Treaty tribe fishers may fish in the mainstem or tributaries of the Columbia River downstream of Bonneville Dam by special agreement to better access certain species or runs for commercial, subsistence, or ceremonial harvest (*United States v. Oregon* 2008). The Cowlitz Indian Tribe may schedule subsistence and ceremonial fisheries in coordination with WDFW (e.g., eulachon/smelt fishery in the Cowlitz River).

Zone 6 is a 147-mile section of the river stretching from just downstream of Bonneville Dam to McNary Dam, including tributaries, (Columbia River Inter-Tribal Fish Commission 2015). Zone 6 is set aside for the exclusive use of treaty commercial fishers, meaning it is closed to non-treaty commercial harvest; however, it is open to non-treaty sport fishers. Within Zone 6 there are 31 sites along the Columbia River established by Congress (Public Law 100-581 – Nov. 1, 1988 102 Stat.

2944 (1988)) near historical fishing villages and sites used by the tribes. These sites are operated and maintained by CRITFC. Several tribes have raised concerns about impacts to tribal members' ability to access Zone 6 for fishing because of the increased train traffic. The Corps does not have control or responsibility over the rail transportation of the coal along the existing mainline tracks, including the rail lines adjacent to Zone 6, and therefore, concerns about fishing access to Zone 6 are outside of the Corps' scope of analysis.

Eulachon (also known as Pacific or Columbia River smelt; scientific name *Thaleichthys pacificus*) return to the Columbia River to spawn in the mainstem Columbia River and its tributaries downstream of Bonneville Dam. Eulachon return every year to the lower Cowlitz River to spawn. Their harvest is a culturally important part of tribes' subsistence and ceremonial fisheries and in some years tribal fishers from the Yakama Nation, Confederated Tribes of Warm Springs, and Cowlitz Indian Tribe harvest this species from the lower Cowlitz River. Eulachon are harvested by dipnet from the bank or a boat.

Fish

Tribally significant fish resources include salmon, steelhead, eulachon (smelt), sturgeon, and lamprey. However, many common fish, like trout, sucker, and minnows are also harvested. These key fish species are of particular interest to tribes, and some are listed as Threatened or Endangered under the ESA. (Chapter 5, Section 5.7, *Fish*, Table 5.7-3, details the ESA status and harvest seasons for each species.) All fisheries in the Columbia River are comanaged by the states of Washington, Oregon, and Idaho, the four treaty tribes, and non-treaty tribes, such as the Cowlitz Indian Tribe, who traditionally fished in the Columbia River. Fisheries are managed by the states and treaty tribes subject to the terms of the *2008–2017 United States v. Oregon Management Agreement*. Chapter 5, Section 5.7, *Fish*, considers the potential impact of construction and operation of the proposed export terminal on salmon and steelhead migrations.

Columbia River eulachon (smelt) are one of the key native fish species important to tribes, and are listed as Threatened under the ESA on the lower Columbia River. Eulachon spawn in downstream tributaries below Bonneville Dam, including the Cowlitz, Kalama, Willamette, and Sandy Rivers, but, since 1994, their numbers have been declining sharply. In 2016, WDFW commercial and sport fishing seasons for eulachon on the lower Cowlitz River lasted 1 day for a duration of 6 and 5 hours, respectively, with a limit of 10 fish per person.

Vegetation

The majority of land in the study areas is developed, open water (primarily the Columbia River), or agricultural; the remainder consists of forest, shrub, herbaceous, wetlands, and barren lands. Dominant vegetation includes black cottonwood, Oregon ash, various willows, red osier dogwood, Himalayan blackberry, Scotch broom, and various grasses, including reed canarygrass. The upland forest on Mount Solo also included some native forest supporting Douglas fir, big leaf maple, red alder, and western hemlock. There is no documented occurrence of any plant species with federal or state status in the study area. The islands in the Columbia River have a more diverse vegetation cover and generally have more intact, less disturbed ecosystems. See Chapter 5, Section 5.6, *Vegetation*, for a more detailed discussion of the vegetation present in the study areas.

Culturally significant plants identified by the tribes include, but are not limited to, western red cedar, acorns from oak trees, camas, wapato, and huckleberries. To date, these plants have not been identified in the project areas. Therefore, annual seasonal excursions are generally required over

their traditional cultural landscape to harvest these plants from their natural habitats. This is likely to take individual families to places like Cowlitz Prairie for root foods or Mount St. Helens for huckleberries. See Chapter 5, Section 5.6, *Vegetation*, for information on specific vegetation in the proposed export terminal area.

Wildlife

A rich diversity of wildlife historically inhabited the waters of, and terrestrial habitat adjacent to, the Columbia River. Development along the river has altered the natural environment sufficiently to alter the distribution and population of species inhabiting these areas.

The On-Site Alternative is located on a disturbed industrial site with roads and industrial buildings. Many of the surrounding areas are also highly disturbed. In general, wildlife habitat in the project areas is degraded because of past industrial uses on the property. The patches of suitable habitat remaining support foraging and cover for small to large mammals; foraging and nesting for birds, including waterfowl, raptors, and passerine birds; and foraging, breeding, and nesting for amphibians. Larger and more mobile species habituated to disturbed environments may also be present in the study area, including coyote (*Canis latrans*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*) and deer (*Odocoileus* sp.). Terrestrial habitat present in the Off-Site Alternative project area is generally similar to the On-Site Alternative project area. Columbian black-tailed deer (*Odocoileus hemionus columbianus*) have been observed in the forested wetland area at the northwest portion of project area. Higher quality habitat is available on Fisher, Walker, and Lord Islands.

Aquatic species present in the study areas are the same for the On-Site Alternative and the Off-Site Alternative. Three species of pinnipeds may be present in the aquatic study area within the Columbia River: harbor seal (*Phoca vitulina*), California sea lion (*Zalophus californianus*), and Steller sea lion (*Eumetopias jubatus*).

Tribally significant wildlife species located in the study areas include deer, bear, waterfowl and eagles. First hunts carried out by young men are ritually celebrated by tribal communities. Eagle feathers are also necessary each year for ceremonial and religious purposes. Wildlife present in the study areas include Columbian white-tailed deer, Columbian black-tailed deer, streaked horned lark, bald eagle, peregrine falcon, waterfowl, purple martin, Vaux's swift, pileated woodpecker, and pinnipeds. More information on wildlife species in the study areas is provided in Chapter 5, Section 5.8, *Wildlife*.

Water

Water is an important resource to the tribes because other natural resources, such as fish and wildlife, would not survive without it. Groundwater resources in the study areas include a shallow aquifer and a deeper confined aquifer from which industries, small farms, and domestic users withdraw groundwater. Surface water sources in the study areas include the Columbia River flowing along the entire south/southwest boundary of the project area and the CDID #1 stormwater system drainage ditches adjacent to the project areas. Of particular concern are threats to the quality of groundwater and surface water by contamination and pollution from various sources. See Chapter 5, Sections 5.4, *Groundwater*, and 5.5, *Water Quality*, respectively, for information on groundwater resources and water quality in the study areas and possible impacts that could result from construction and operation of the proposed export terminal.

4.5.5 Impacts

The following discussion focuses on summarizing the potential impacts on such resources of tribal concern as fish, vegetation, wildlife, and water. Detailed information and analyses about impacts related to these resources can be found in Chapter 4.4, *Cultural Resources*, and Chapter 5, *Natural Environment: Affected Environment and Project Impacts*, of this Draft EIS.

4.5.5.1 Fishing Sites

Impacts on tribal fishing in the study areas related to construction and operation of the proposed export terminal would be the same for the On-Site Alternative and the Off-Site Alternative. There would be a temporary increase in barge traffic related to the construction of the terminal. Operation of the proposed export terminal would result in up to 1,680 vessel transits annually in the lower Columbia River downstream of the project areas. However, tribal fishing generally occurs outside of the study areas, primarily upstream of the project areas starting just below Bonneville Dam (Zone 6), as provided in agreements among the tribes and the states of Washington and Oregon. Therefore, there should be no measurable impact on tribal fishing.

4.5.5.2 Fish

Impacts on fish would be the same for both the On-Site Alternative and Off-Site Alternative. Construction impacts would include underwater noise associated with the installation of steel piles and turbidity during dredging and disposing of dredged material. These impacts could result in behavioral responses or injury to fish.

The addition of new overwater structures and increased vessel traffic could also affect fish. In-river structures would increase overwater shading, which could affect primary productivity, fish behavior, predation, and migration. The noise and wakes generated by vessels could also affect fish. Noise levels, however, were found not to be injurious to fish. There would be an increased risk of fish stranding caused by the wakes of project-related vessels transiting the river during operation of the proposed export terminal.

4.5.5.3 Vegetation

Construction of the proposed export terminal at either the On-Site Alternative or Off-Site Alternative location would permanently remove forested, scrub-shrub, and herbaceous vegetation, including wetland vegetation. However, no culturally significant plant species are known to be present in these areas. Operation of the terminal would generate coal dust, which would likely be deposited on nearby vegetation. However, implementing best management practices would reduce coal dust emissions in the project area.

4.5.5.4 Wildlife

Impacts on wildlife would be the same for both the On-Site Alternative and Off-Site Alternative. Construction of the proposed export terminal would result in loss of both terrestrial and aquatic habitat. Noise from construction and operation could also affect both terrestrial and aquatic wildlife. Temporary impacts would also occur due to dredging and in-water disposal of dredged material. Operation of the terminal could generate coal dust, which could affect wildlife through physical or toxicological means. The proposed export terminal could affect culturally significant species.

4.5.5.5 Water

Impacts on groundwater and water quality would be the same for both the On-Site Alternative and Off-Site Alternative. Local groundwater quality in the study areas is good, with no identified pollutant concentrations above human health screening levels. Construction activities would not be an expected result in groundwater degradation. Construction and operation of the proposed export terminal could result in accidental releases of contaminants (e.g., fuel, oil, chemicals), introducing pollutant-laden runoff to surface waters and potentially degrading water quality. The Applicant would be required to obtain and comply with a National Pollutant Discharge Elimination System (NPDES) Industrial Stormwater Permit and an NPDES Construction Stormwater General permit and develop and comply with a site-specific construction Stormwater Pollution Prevention Plan. Impacts related to vessel transport could cause temporary, localized increases in turbidity, and could release fuel or hazardous materials as a result of a vessel incident or collision. Federal and state emergency response and cleanup programs would require cleanup actions if a spill were to occur.

4.5.5.6 No-Action Alternative

Under the No-Action Alternative, the Corps would not issue a Department of the Army permit authorizing construction and operation of the proposed export terminal. As a result, impacts resulting from constructing and operating the terminal would not occur. In addition, not constructing the terminal would likely lead to expansion of the adjacent bulk product business onto the export terminal project area. Potential impacts on fish, vegetation, wildlife, and water could occur under the No-Action Alternative and could be similar to those described for the On-Site Alternative, but the magnitude of any impact would depend on the nature and extent of the future expansion.

4.6 Hazardous Materials

Hazardous materials are substances that can adversely affect public health and safety and the natural environment. There are risks in using, storing, and transporting hazardous materials. If a hazardous material is released into the environment, it can contaminate the surrounding area and expose people and the environment to harm.

This section describes hazardous materials relevant to the proposed export terminal and impacts related to hazardous materials that could occur as a result of construction and operation of the terminal.

4.6.1 Regulatory Setting

Laws and regulations relevant to hazardous materials are summarized in Table 4.6-1.

Table 4.6-1. Regulations, Statutes, and Guidelines for Hazardous Materials

Regulation, Statute, Guideline	Description
Federal	
Comprehensive Environmental Response, Compensation, and Liability Act (42 USC 103)	Regulates former and newly discovered uncontrolled waste disposal and spill sites identified on the National Priority List of contaminated sites and under the Superfund cleanup program.
Superfund Amendment and Reauthorization Act (40 CFR 302)	Amended CERCLA and requires reporting for emergency response, emergency release, and hazardous and toxic chemical releases.
Federal Resource Conservation and Recovery Act (42 USC 6901 <i>et seq.</i>)	Governs the generation, storage, and transportation of hazardous waste and waste management activities for hazardous waste treatment, storage, and disposal facilities. This is a delegated Washington State program under the Washington Hazardous Waste Management Act.
Toxic Substances Control Act (15 USC 2601–2629)	Tracks industrial chemicals in the United States and regulates intrastate and interstate commerce.
Clean Water Act (33 USC 1342, 1344; 40 CFR 230)	Regulates the placement of fill material in waters of the United States, including fill placement below ordinary high water elevation or within navigable waters or wetlands.
Department of Transportation Hazardous Materials Regulations (49 CFR 100–185)	Protect against the risks to life, property, and the environment and apply to all interstate, intrastate, and foreign transport of hazardous materials in commerce.
National Emission Standards for Hazardous Air Pollutants (40 CFR 61–71)	Set standards regulating the emission of these pollutants with EPA and the state implementing and enforcing them. Hazardous air pollutants are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects.

Regulation, Statute, Guideline	Description
Safe Drinking Water Act (42 USC 300f <i>et seq.</i>)	Requires the protection of groundwater and groundwater sources used for drinking water. Requires every state to develop a wellhead protection program.
Occupational Safety and Health Act (29 USC 651 <i>et seq.</i>)	Enacted to “assure safe and healthful working conditions for working men and women.” Sets standards and enforces inspections to ensure that employers are providing safe and healthful workplaces.
State	
Washington Water Pollution Control Permit Program	Requires that all releases to waters of the state of a reportable quantity must be reported to Ecology as soon as possible, but no later than 24 hours after discovery.
Model Toxics Control Act and its implementing regulations (RCW 70.105D and WAC 173-340)	Requires potentially liable persons to assume responsibility for cleaning up contaminated sites. Requires reporting hazardous substance releases if they constitute a threat to human health or the environment.
State Water Pollution Control Law (RCW 90.48)	Provides Ecology with the jurisdiction to control and prevent the pollution of streams, lakes, rivers, ponds, inland water, salt waters, watercourses, and other surface and groundwater in the state.
Oil and Hazardous Substance Spill Prevention and Response (RCW 90.56)	Established to prevent the release of oil and other hazardous substances to the navigable waters of the state. Intended to prevent spills and promote programs that reduce the risk of spills.
Underground Storage Tank Regulations (RCW 90.76 and WAC 173-360)	Ensure that underground storage tanks are installed, managed, and monitored in a manner that prevents releases to the environment.
Water Quality Standard for Surface Waters of the State of Washington (WAC 173-201A)	Establishes water quality standards for surface waters in Washington State. Ecology is the responsible agency.
Sediment Management Standards (WAC 173-204)	Establish numerical standards for the protection of benthic invertebrates in marine sediments.
Washington Hazardous Waste Management Act (RCW 70.105, and WAC 173-303)	State equivalent of RCRA; requires designation of dangerous and extremely hazardous waste, and proper handling, storage, transport, and disposal of such wastes. Governs and establishes regulations for hazardous waste treatment, storage, and disposal facilities.
Washington Administrative Code (WAC 173-340-300)	Requires reporting hazardous substance releases if they constitute a threat to human health or the environment.
Washington Solid Waste Handling Standards (WAC 173-350)	Set standards for the proper handling and disposal of solid waste originating from residences, commercial, agricultural, and industrial operations and other sources.
General Occupational Health Standards (WAC 296-62)	Protect the health of employees and help create a healthy work place by establishing requirements to control health hazards including chemical hazard communication and exposure programs.
Hazardous Waste Operations (WAC 296-843)	Applies to facilities that have workers handling hazardous waste at a treatment, storage, or disposal facility and are required to have a permit under RCRA.

Regulation, Statute, Guideline	Description
Safety Standards for Construction Work (WAC 296-155)	Apply to work places where construction, alteration, demolition, related inspection, and/or maintenance and repair work, including painting and decorating, is performed. Set minimum safety requirements with which all industries must comply when engaged in these types of work.
Notes: USC = United States Code; CFR = Code of Federal Regulations; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; EPA = U.S. Environmental Protection Agency; WAC = Washington Administrative Code; Ecology = Washington State Department of Ecology; RCW = Revised Code of Washington; RCRA = Resource Conservation and Recovery Act	

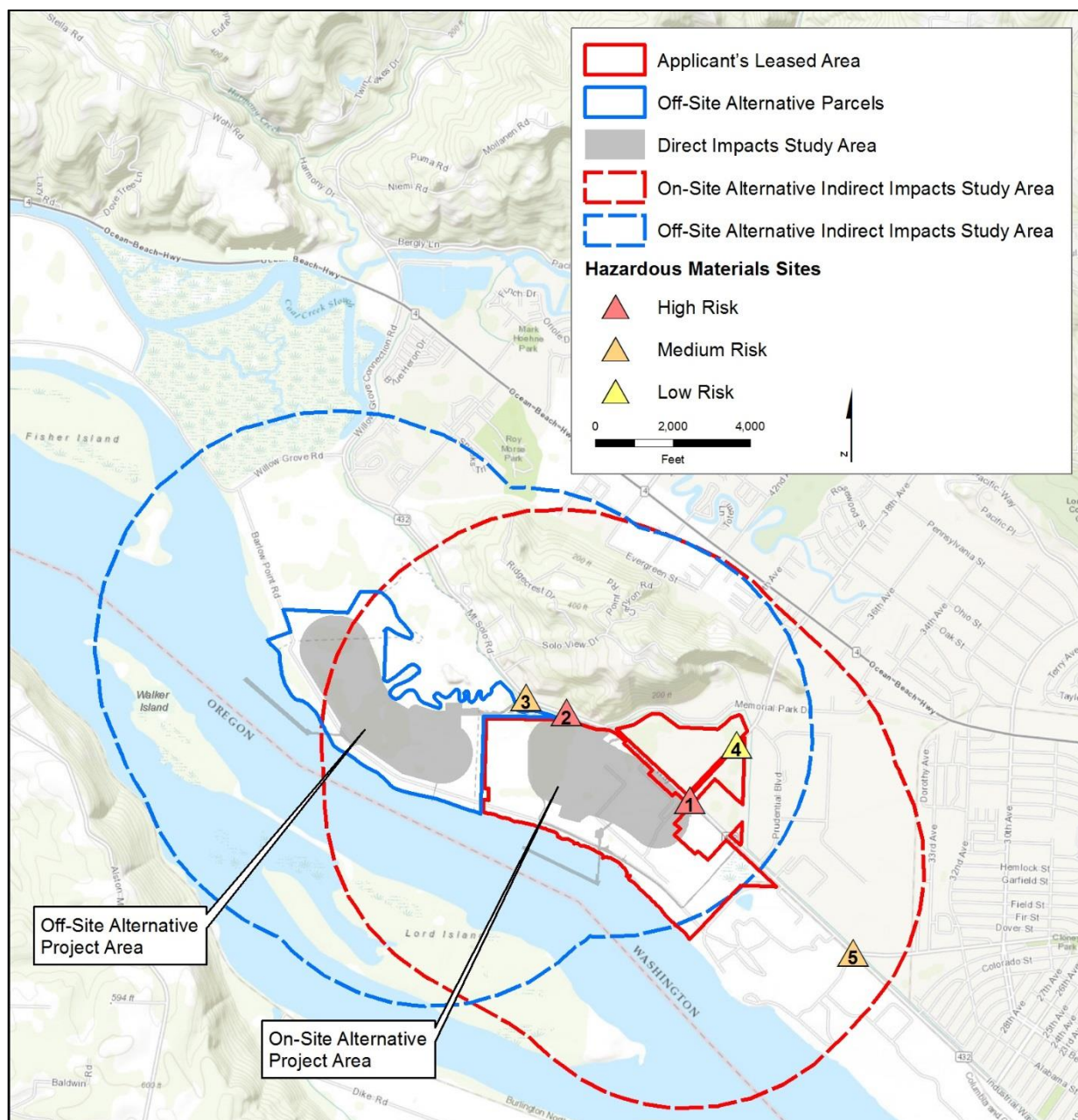
4.6.2 Study Area

The study area for direct impacts for both the On-Site Alternative and the Off-Site Alternative is the project area. The study area for indirect impacts is the direct impacts study area plus the area within 1 mile of the project area, which includes the BNSF Spur-Reynolds Lead rail corridor

Additionally, the nearest hazardous materials sites with a high potential to cause environmental impacts, such as Superfund sites, landfills, or large-quantity generators of hazardous waste, were identified and evaluated, even if located outside the study area. The nearest federal Superfund site is the Hamilton-Labree Roads site, which is 33 miles north of the study area. Due to its distance from the study area, this site was not further evaluated and is not included in this Draft EIS. In addition, the nearest landfill was identified as the Cowlitz County Landfill, which is approximately 4 miles east of the study area. This site was not further evaluated in this Draft EIS due to its distance from the project area and because groundwater at this site flows away from the project area. Furthermore, a No Further Action (NFA) status has been issued for the landfill site, further reducing its potential to affect or be affected by construction or operation of the On-Site Alternative.

Dietz Bros. Inc., located at 149 Barlow Point Road, is within the Off-Site Alternative project area. This site is currently a general freight trucking company that does not generate, treat, store, or transport hazardous materials. Additionally, the site was not found in Ecology's Contaminated Site Cleanup Information database and no violations were identified for the site in any of the databases researched. As such, the site was eliminated from further evaluation in this document.

Figure 4.6-1 shows the study area for direct and indirect impacts for both the On-Site Alternative and Off-Site Alternative.

Figure 4.6-1. Hazardous Materials Sites and Study Areas

4.6.3 Methods

This section describes the sources of information and methods used to evaluate the potential impacts related to hazardous materials associated with construction and operation of the proposed export terminal.

4.6.3.1 Hazardous Materials Definition

In this Draft EIS, *hazardous materials* refers to various types of contaminated or hazardous media, including contaminated environmental media, dangerous waste, solid waste, hazardous substances, and petroleum products.

Contaminated environmental media includes soil, sediment, groundwater, or surface water that have been affected by a release of a hazardous material, hazardous or dangerous waste, or hazardous substance. Sites with contaminated environmental media would be regulated under the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) or Resource Conservation and Recovery Act (RCRA), or under the state Model Toxics Control Act (MTCA).

- Dangerous waste is solid waste designated in Washington Administrative Code (WAC) 173-303-070 through 173-303-100 as dangerous, or extremely hazardous or mixed waste. Dangerous waste includes all federal hazardous waste, plus certain wastes exhibiting specific criteria based on toxicity and persistence.
- Solid waste is defined slightly differently in state and federal regulations. State regulations define solid waste as solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, and recyclable materials. Federal regulations define solid waste as any garbage, refuse, or sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility, and other discarded material that includes solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities. Solid waste includes hazardous and problem wastes.
- Hazardous substances are defined under CERCLA Section 9601(14). A list of more than 600 CERCLA hazardous substances is provided in 40 Code of Federal Regulations (CFR) 302.4. CERCLA Section 9601(33) defines pollutants or contaminants in terms of their negative impact on people and the environment.
- Hazardous substances are also defined under the state MTCA. The term means any dangerous or extremely hazardous waste as defined in Revised Code of Washington (RCW) 70.105.010 (5) and (6), or any dangerous or extremely dangerous waste as designated by rule under RCW 70.105; any hazardous substance as defined in RCW 70.105.010(14) or any hazardous substance as defined by rule under RCW 70.105; any substance that, on the effective date of this section, is a hazardous substance under Section 101(14) of the federal cleanup law, 42 U.S.C., Sec. 9601(14); petroleum or petroleum products; and any substance or category of substances, including solid waste decomposition products, determined by the director by rule to present a threat to human health or the environment if released into the environment.

The term *hazardous substance* does not include any of the following when contained in an underground storage tank from which there is not a release: crude oil or any fraction thereof or petroleum, if the tank is in compliance with all applicable federal, state, and local laws.

4.6.3.2 Information Sources

The following sources of information were used to identify the potential impacts of the proposed export terminal regarding hazardous materials.

- *DataMap Area Study for the On-Site Alternative* (Environmental Data Resources 2014)
- *DataMap Area Study for the Off-Site Alternative* (Environmental Data Resources 2015)
- *Millennium Coal Export Terminal Longview, Washington Hazardous Materials Resource Report* (URS Corporation 2014a)
- *Final Remedial Investigation and Feasibility Study* (Anchor QEA 2015)
- *Millennium Coal Export Terminal Longview, Washington Off-Site Alternative-Barlow Point Resource Report* (URS Corporation 2014b).
- Washington State Department of Ecology (Ecology) (2014a) regulatory files

The *DataMap Area Study for the On-Site Alternative* (Environmental Data Resources 2014) and the *DataMap Area Study for the Off-Site Alternative* (Environmental Data Resources 2015) investigated all sites in the two study areas that use hazardous materials. The studies included a search of federal, state, local, and other appropriate databases to obtain information on facilities that use, store, transport, or generate regulated and potentially hazardous substances. The database search results used in support of this analysis were reported in accordance with the ASTM Standard Practice for Environmental Site Assessments, E 1527-13. The *NEPA Hazardous Materials Technical Report* (ICF International 2016) contains a complete list of searched databases.

4.6.3.3 Data Screening

The *DataMap Area Study for the On-Site Alternative* (Environmental Data Resources 2014) and *DataMap Area Study for the Off-Site Alternative* (Environmental Data Resources 2015) identified 24 sites within 1 mile of the project areas. Eight of these sites are associated with historical and current operations in the Applicant's leased area (i.e., the 540-acre industrial site currently leased by the Applicant). Ten orphan sites¹ were identified; however, nine of these ten sites were determined to be outside the study areas and were eliminated from further evaluation (Environmental Data Resources 2014). The one remaining orphan site within the study area was also eliminated from further consideration because no known releases have been reported for the site.

The remaining sites located outside the Applicant's leased area but within both study areas were then screened to determine if they should be eliminated or carried forward for analysis. Screening criteria are listed below.

- Sites where hazardous materials are stored and used in compliance with laws and regulations (e.g., RCRA), including large- and medium-quantity generators and underground storage tank sites, were assumed to have negligible risks of being affected by or having an impact on the On-Site Alternative or Off-Site Alternative. Thus, these types of sites were excluded from further analysis.
- Other sites were also eliminated from further analysis, including closed sites or NFA sites where remediation (e.g., contaminated soil removal or groundwater cleanup) had been completed.

¹ Orphan sites are hazardous materials sites where the polluter could not be identified or held accountable, and/or the address/location information is incomplete.

Sites that were retained based on the screening criteria listed above were subsequently ranked as being high-, medium-, or low-risk with regard to whether hazardous materials would affect or be affected by construction or operation of the terminal.

- **High-risk sites.** High-risk sites include sites where both soil and groundwater have been affected by a release of hazardous materials and where groundwater flow is predominantly toward the project area. The site is partially closed (e.g., soil cleanup has been completed) but has ongoing groundwater-focused remedial or monitoring activities planned, and the site is located within 500 feet of the project area.
- **Medium-risk sites.** Medium-risk sites include sites where both soil and groundwater have been affected by a release of hazardous materials and where groundwater flow is predominantly toward the project area. The site is partially closed (e.g., soil cleanup has been completed) but has ongoing remedial or monitoring activities planned, and the site is located within 500 to 1,000 feet of the project area.
- **Low-risk sites.** Low-risk sites include sites where only soil has been affected by a release of hazardous materials and where groundwater has not been affected. The site has been closed by an oversight agency with an NFA status or no further remedial action is planned, and the site is located more than 1,000 feet from the project area but within the study area.

The ranking criteria considered the environmental media contaminated (soil or groundwater), the direction of groundwater flow, the status of remediation (site partially closed or closed with status of NFA), and distance between the hazardous materials site and the project areas. Based on these criteria, five sites were identified in the study areas:

- **Site 1.** U.S. Department of Energy, Bonneville Power Administration, Longview Substation (high risk)
- **Site 2.** McCall Trucking (high risk)
- **Site 3.** Schill Brothers Asphalt & Paving/American Asphalt (medium risk)
- **Site 4.** GT Metals and Salvage (low risk)
- **Site 5.** Weyerhaeuser Chlor-Alkali Facility (medium risk)

These five hazardous materials sites are presented in Figure 4.6-1 and described in Section 4.6.4.3, *Hazardous Materials Sites in the Study Areas*.

4.6.3.4 Impact Analysis

The methods described above were used to assess the potential environmental impacts of hazardous materials that could result from construction and operation of the proposed export terminal. For direct impacts, the analysis assumes best management practices were incorporated into the design, construction, and operations of the terminal. More information about best management practices can be found in Chapter 8, *Minimization and Mitigation*, and Appendix H, *Export Terminal Design Features*.

4.6.4 Affected Environment

This section describes the affected environment in the study areas related to hazardous materials.

4.6.4.1 On-Site Alternative

The following sections describe the contaminated sites and remediation history located in the study area for the On-Site Alternative.

Contaminated Sites

This section summarizes the history of contamination and remedial actions in the Applicant's 540-acre leased area, which includes the 190-acre On-Site Alternative project area. The discussion also identifies chemicals of concern and final cleanup options or actions that would take place under a cleanup action plan unrelated to the proposed export terminal. Figure 4.6-2 shows the previous cleanup and focus areas on the Applicant's leased area and the project area for the On-Site Alternative. For more information, refer to the *Remedial Investigation/Feasibility Study* (Anchor QEA 2015).

Project Area

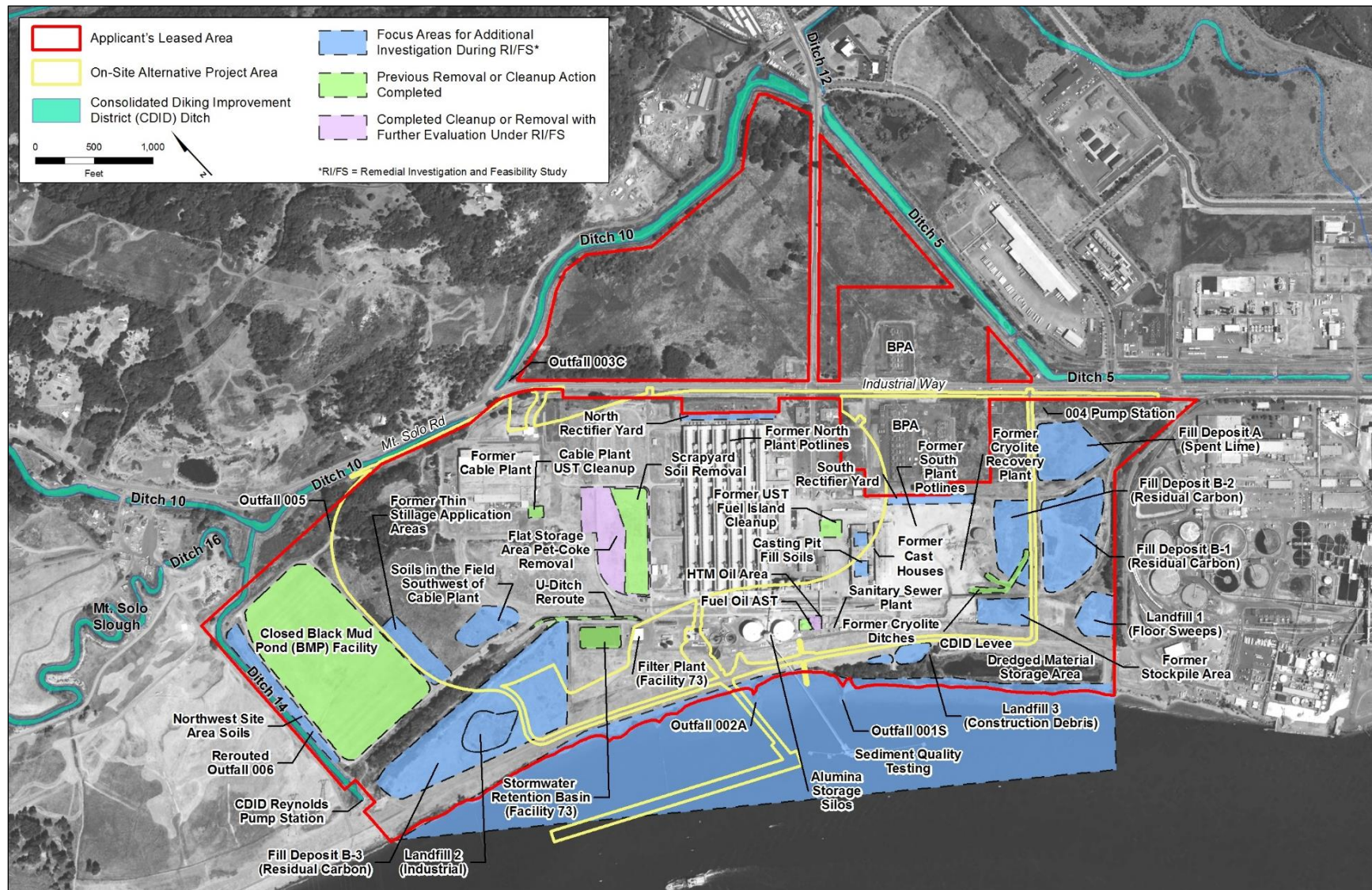
Contaminated sites in the project area include aluminum production facilities and former cable plant operations.

Aluminum Production Facilities

Initial industrial operations at the former Reynolds facility began in 1941 when the eastern portion of the project area was developed as an aluminum reduction plant for aluminum smelting and casting operations. These operations were expanded in 1967 when the western portion of the former Reynolds facility was developed for additional aluminum production; this area was known as the North Plant.

Smelter operations required an extensive dry-materials handling system for raw materials, such as alumina ore (transported by rail or ocean-going vessel), petroleum coke, coal tar pitch, anthracite coal, cryolite, and aluminum fluoride (transported by rail and truck). Liquid coal tar was unloaded from rail cars and transferred into on-site storage tanks, which were connected to the greenmill by distribution lines. At the greenmill, pitch (which contains polycyclic aromatic hydrocarbons [PAHs]) was used as a raw material for anode and cathode fabrication. Pitch was also stored on the ground near the rail unloading area. Elevated concentrations of fluoride in soils have been associated with historical smelter operations at the former Reynolds facility.

Figure 4.6-2 shows the location of the aluminum manufacturing facilities. The potline buildings and cast houses lie within the boundaries of the project area, while the alumina storage silos lie outside the project area's southern boundary.

Figure 4.6-2. Previous Cleanup and Focus Areas in the Applicant's Leased Area and the Project Area for the On-Site Alternative

Former Cable Plant Operations

The cable plant was constructed in the late 1960s. It was located west of the aluminum production facilities and within the boundaries of the project area. The cable plant produced electrical cable products, including aluminum wire, rods, and insulated (polyethylene and polyvinyl) low- and medium-voltage cable. The cable plant received molten aluminum from the aluminum production facilities and processed it in three furnaces: a continuous ingot caster, a rolling mill, and wire drawers. Ancillary structures associated with the cable plant included office buildings, a parking lot, and an on-site sanitary wastewater treatment plant.

The cable plant ceased production in 1992 and all assets were removed from the buildings. Since the mid-1990s, the facility has been mostly inactive and used only sporadically for storage. In addition, with approval from Ecology, successfully treated soil from the fuel island cleanup area was used for fill in former equipment concrete pits in the cable plant warehouse floor (see *Remediation History*, in Section 4.6.4.1, *Project Area for the On-Site Alternative*).

Applicant's Leased Area outside of the Project Area

Contaminated sites on the Applicant's leased area outside of the project area include a cryolite recovery plant, industrial landfills, the closed Black Mud Pond (BMP) facility, and other historical uses after closure of the former Reynolds facility.

Cryolite Recovery Plant

The cryolite recovery plant was constructed in 1953 in the former Reynolds facility East Plant area, east of the cast houses and outside the project area. It was used as a *spent potliner* (SPL) recovery and recycling facility for both the former Reynolds facility and other northwest aluminum reduction plants. SPL is a byproduct of the aluminum manufacturing process. It contains fluoride and PAH compounds and, potentially, varying levels of cyanide. The cryolite recovery plant also recovered reusable fluoride compounds, called *underflow solids*, which were eventually used to control air emissions that occurred during the aluminum manufacturing process. The underflow solids were collected in clarifiers at two locations on the former Reynolds facility.

The cryolite recovery process involved multiple steps, resulting in *black mud*, a black carbon liquid, which was disposed in several fill deposits on the former Reynolds facility. The fill deposits were closed in the 1960s and 1970s and were subsequently capped with clean soil. The cryolite recovery process also required lime to produce a sodium hydroxide solution. Circa 1980, the spent lime facility, which was constructed as part of the original cryolite recovery plant for the cryolite recovery process, was combined and managed with the residual carbon facility.

With the increase in regulatory requirements associated with SPL stockpiling and handling in the 1980s, Reynolds began to bury and cover the stockpiled SPL. Groundwater monitoring wells were installed to assess and monitor potential impacts on groundwater.

In May 1990, the cryolite recovery plant ceased operation. The SPL generated during aluminum manufacturing was removed and shipped to permitted treatment, storage, and disposal facilities. The cryolite recovery plant facilities were removed in May 1990; the land in that area is now vacant. No deposits of SPL are known to remain within the former Reynolds facility.

Carbon was generated as a by-product of operation of the on-site cryolite recovery process. Residual carbon from this process typically includes calcium carbonate, alumina, fluoride compounds, sodium, iron, and sulfate. Test results from groundwater monitoring wells indicated that shallow groundwater at the former cryolite plant contained elevated concentrations of fluoride, with high alkalinity as a result of the cryolite plant's operations. Additional investigations, findings, and cleanup of the residual carbon deposits are discussed under *Remediation History*, in Section 4.6.4.1, *On-Site Alternative*.

Industrial Landfills

Three historical landfills are located in the Applicant's leased area but outside the project area (Figure 4.6-2). These include the floor sweeps landfill (Landfill 1), east of the former cryolite recovery plant; the industrial landfill (Landfill 2) on the southwest side of the former Reynolds facility West Plant area; and the construction debris landfill (Landfill 3), between the Consolidated Diking Improvement District (CDID) #1 levee and the Columbia River.

The floor sweeps landfill (Landfill 1) received dry materials gathered from floors in the potline buildings, including alumina, bath, cryolite, and aluminum fluoride. By the mid-1970s, the floor sweeps landfill was no longer in use, and the industrial landfill (Landfill 2) began operation. The industrial landfill was used primarily for management of inert wastes, including scrap coke, ore, cryolite, aluminum fluoride, bath, brick, concrete, and debris from miscellaneous maintenance activities. The construction debris landfill (Landfill 3) contains concrete debris and other plant wastes, similar to those of the industrial landfill. Standard practices included not placing liquids in the landfills.

Closed Black Mud Pond (BMP) Facility

As discussed under the former cryolite recovery plant operations, a byproduct of the cryolite recovery process was black mud, which was disposed of in several fill deposits. One such pond was located in the West Plant area near Landfill 2 (Figure 4.6-2). The 33-acre BMP impoundment, which was formally closed in 1992, has been subject to an approved ongoing maintenance and monitoring program overseen by Ecology. Since implementation, the closed BMP facility has continued to meet the requirements of the maintenance and monitoring program. Details on closure, post-closure, and maintenance and monitoring can be found in the *Millennium Coal Export Terminal Longview, Washington Hazardous Materials Resource Report* (URS Corporation 2014a). No further remedial activities related to the closed BMP facility are required in the final cleanup action plan.

Historical Uses after Closure of the Reynolds Facility

Aluminum production operations at the former Reynolds facility ceased in 2001 at the time of the facility's closure. Between 2004 and 2011, Chinook Ventures, Inc. (Chinook Ventures) operated a terminal for the import, handling, and export of dry bulk materials, such as alumina, coal, green petroleum coke, cement, fly ash, slag, and other materials. During this time, Chinook Ventures decommissioned the majority of the facilities associated with aluminum manufacturing operations and recycled materials from smelters, which were being decommissioned throughout the northwest region of the United States. These activities included the removal and disposal or recycling of alumina, electrolyte bath, coal, and carbon products. In 2011, Chinook Ventures sold its assets to the Applicant. The Applicant subsequently removed most of the structures constructed by Chinook Ventures and continued facility decommissioning, removal, and cleanup activities.

Remediation History

The remediation history for the study area is presented in Appendix J, *Hazardous Materials Remediation History*. In 2007, Northwest Alloys and the Applicant signed an Agreed Order (AO No. DE-8940) with Ecology to complete a remedial investigation and feasibility study (RI/FS). The purpose of the RI/FS was to investigate the nature and extent of impacts at the site and identify cleanup options. From 2011 through 2014, the Applicant tested soils and completed laboratory analyses as part of the RI/FS. In May 2014, Northwest Alloys submitted a second RI/FS, detailing over 18,000 chemical measurements of soil, surface water, groundwater and sediment along with extensive testing and engineering to support possible cleanup alternatives.

Ecology held a public comment period from June 2 through August 1, 2014, which included several public workshops and a formal hearing. Following the public comment period, Ecology prepared a Responsiveness Summary in January 2015, and has developed a draft cleanup action plan. Ecology will select cleanup standards and points of compliance in the final cleanup action plan. A cleanup action plan is typically prepared after the RI/FS has been finalized and a preferred remedial alternative selected. The plan is based on information and technical analyses generated during the RI/FS and consideration of public comments and community concerns.

A draft cleanup action plan and draft consent decree was released in 2016 for a 60-day public comment period (Washington State Department of Ecology 2016). The comment period ended March 18, 2016. A responsiveness summary will be prepared to address public comments and then the reports will be finalized. Likely remedial technologies will include a combination of, but not necessarily all of, the following: removal, consolidation, capping, groundwater treatment, and monitored natural attenuation treatments. Property owner Northwest Alloys, Inc. (a subsidiary of Alcoa, Inc.) and the Applicant are legally responsible for the cleanup, including paying for and performing the work.

4.6.4.2 Off-Site Alternative

The 220-acre Off-Site Alternative project area is adjacent to the On-Site Alternative project area, immediately west of CDID Ditch 14.

Limited site-specific subsurface information was available at the time this document was prepared; however, the project area is undeveloped and generally consists of dense vegetation and grassy areas that extend to the shoreline of the Columbia River. A portion of the eastern side of the project area is in agricultural use while another portion of the project area appears to have been used for motocross racing. Agricultural uses included pasture, silage/grass/hay, food crops, commercial Christmas trees, and two golf courses that are considered turf grass crops. Agricultural and motocross activities may have included the use of pesticides, herbicides, fuels, lubricants, and other related contaminants. No groundwater wells have been constructed on, and no structures are present within, the project area.

Surrounding land uses include the residential neighborhoods of Barlow Point immediately to the northeast, and Memorial Park and West Longview less than 1 mile to the north of the project area. The closed Mount Solo Landfill is also immediately north of the project area. The On-Site Alternative project area is also immediately adjacent to the east. The nearest residential community is the West Longview neighborhood, less than 1 mile north of the project area. The next-nearest residential communities are to the east about 1 to 2 miles from the project area toward the Longview city

center and include the Olympic West, Columbia Valley Garden, Highlands, and Columbia Valley Gardens neighborhoods.

Groundwater conditions are anticipated to be similar to those for the On-Site Alternative project area due to the presence of the CDID #1 ditch system (Ditches 14 and 16) that borders the project area to the north and east, but these conditions have not been confirmed. Groundwater data collected from nearby groundwater monitoring wells installed in conjunction with the post-closure monitoring of the Mount Solo Landfill indicate that there may be a slight groundwater gradient from the closed Mount Solo Landfill toward the project area, at least within the shallow groundwater zone. It is possible that this is the result of a more pronounced groundwater flow gradient between the Mount Solo Landfill and CDID Ditch 16, which caused a significant difference in topographic relief between the On-Site Alternative project area and the Off-Site Alternative project area. Therefore, the CDID #1 ditch system may have a reduced impact on the shallow aquifer in terms of groundwater gradient in this isolated area (URS Corporation 2014b).

4.6.4.3 Hazardous Materials Sites in the Study Areas

Hazardous materials sites outside of the Applicant's leased area and the Off-Site Alternative project area, but still within the indirect impacts study area for hazardous materials, are presented below. Data screening identified five hazardous materials sites that require further evaluation (Section 4.6.3.3, *Data Screening*). These sites, shown in Figure 4.6-1, are described in Table 4.6-2. For additional information on the hazardous materials sites, refer to the *NEPA Hazardous Materials Technical Report*.

Table 4.6-2. Hazardous Materials Sites in the Indirect Impacts Study Area

Site	Business Name	Distance from Project Area	Risk Class
Sites within both the On-Site Alternative and Off-Site Alternative Indirect Impacts Study Areas			
1	U.S. DOE BPA Longview Substation/Longview Substation	33 feet from On-Site Alternative 0.5 mile from Off-Site Alternative	High
2	McCall Trucking	127 feet from On-Site Alternative 100 feet from Off-Site Alternative	High
3	Schill Brothers Asphalt & Paving/American Asphalt ^a	722 feet from On-Site Alternative 100 feet from Off-Site Alternative	Medium
4	GT Metals and Salvage (formerly Longview Auto Wrecking)	1,902 feet from On-Site Alternative 0.5 mile from Off-Site Alternative	Low
Sites within the On-Site Alternative Indirect Impacts Study Area Only			
5	Weyerhaeuser Chlor-Alkali Facility	2,953 feet from On-Site Alternative	Medium
Sites within the Off-Site Alternative Indirect Impacts Study Area Only			
There were no sites exclusively located in the Off-Site Alternative Study Area only.			
Notes:			
^a The Schill Brothers Asphalt & Paving/American Asphalt 1 site is located adjacent to and partially atop the inactive Mount Solo Landfill, which was classified as a limited-purpose landfill that disposed of mainly wood-wastes and construction and demolition waste between about 1966 and 1992. The landfill was closed in 1993 under WAC 173-304 Minimum Functional Standards for Solid Waste Handling. According to information received from the Cowlitz County Health Department, Environmental Health Unit (EHU), the current environmental status of the Mount Solo Landfill is unknown. According to the EHU, the last annual report was received in 2008 and the last post closure permit was issued that same year. The landfill has not been actively monitored since then (Long pers. comm.).			
Sources: Washington State Department of Ecology 2014b–2014o; ICF International 2016.			
U.S. DOE = U.S. Department of Energy; BPA = Bonneville Power Administration			

4.6.5 Impacts

This section describes the potential direct and indirect impacts related to hazardous materials that would result from construction and operation of the proposed export terminal.

4.6.5.1 On-Site Alternative

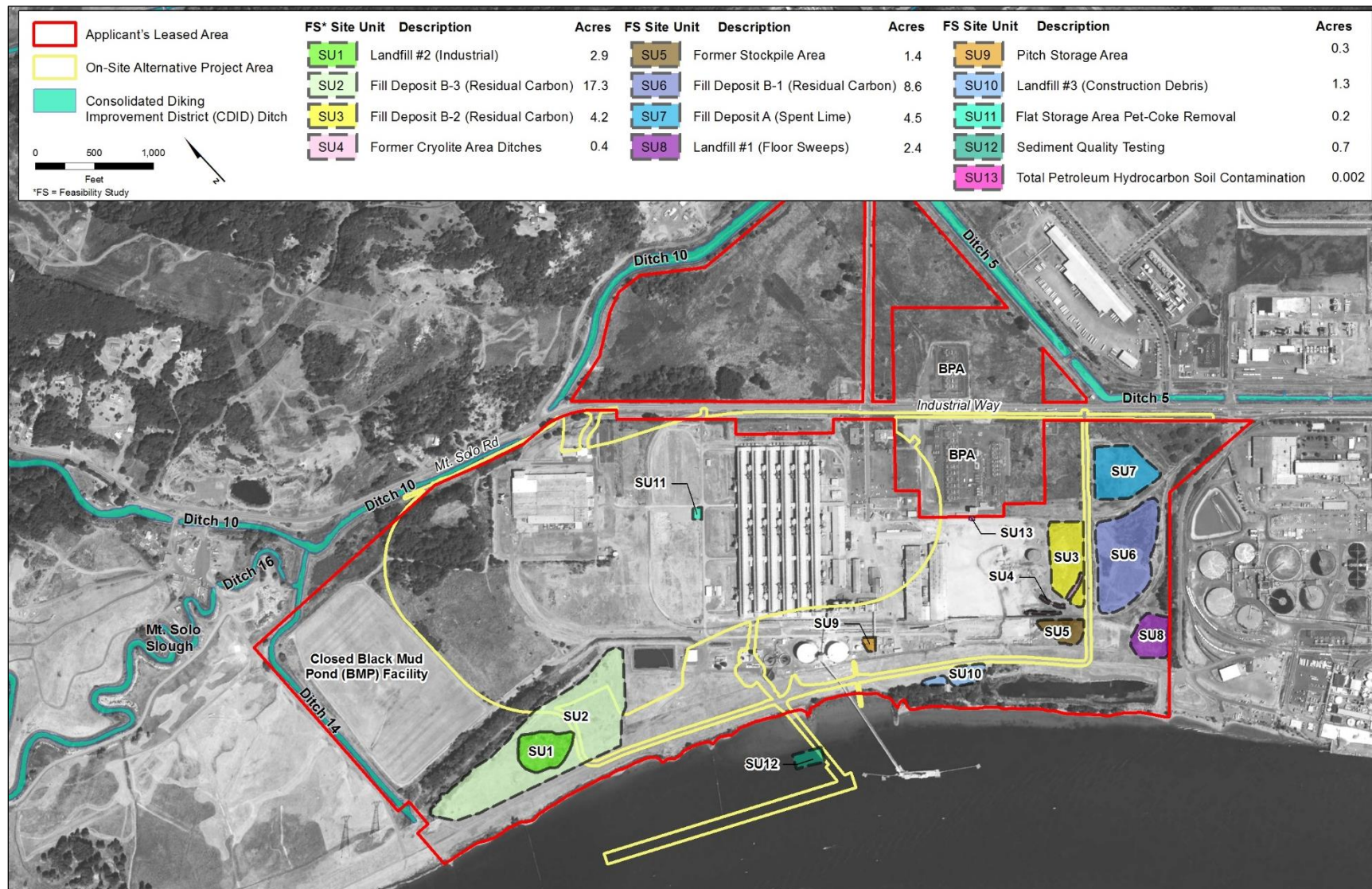
This section describes the potential impacts that could occur in the study area as a result of construction and operation of the proposed export terminal at the On-Site Alternative location.

Construction—Direct Impacts

Construction-related activities include demolishing existing structures and preparing the site, constructing the rail loop and dock, and constructing supporting infrastructure (e.g., conveyors and transfer towers). Construction equipment would include heavy machinery to prepare foundations and footings for the new facility, associated services, and utilities. This equipment would likely include cranes, wheel loaders, dozers, dump trucks, excavators, graders, rollers, compactors, drill rigs, pile-driving equipment, portable ready-mix batch plant, ready-mix trucks, concrete pumps, elevated work platforms, forklifts, rail track-laying equipment, welders, water pumps, and other similar machinery. Waste likely to be generated or encountered during construction would consist of contaminated soils and sediment; contaminated groundwater generated by excavation, drilling, and dewatering activities; and existing on-site building materials containing lead or asbestos. Construction of the proposed export terminal could result in exposing or introducing these substances to the project area, which would pose risks to human health and environment.

Encountering Hazardous Materials

Construction of the terminal at the On-Site Alternative location would take place in the RI/FS cleanup and focus areas and would pose risks to human health and environment should any hazardous materials be encountered through contact with contaminated soil, contaminated groundwater, and inhalation of toxic vapors. However, with the exception of two small areas on the eastern corner of the flat storage area and the northeastern portion of Fill Deposit B-3 (SU11 and SU2 in Figure 4.6-3), construction in the On-Site Alternative project area would occur where remedial action is not required, because hazardous materials are either not present or have been previously remediated. In the two areas where overlap would occur, construction of the terminal and remediation would be coordinated to minimize potential exposure to construction personnel and the environment. Northwest Alloys and the Applicant would be required to follow the final cleanup action plan, comply with applicable state and federal laws and regulations, and conduct compliance monitoring to ensure cleanup actions comply with the cleanup plan. Therefore, remedial actions are expected to remove or isolate all hazardous materials and ensure that any remaining hazardous materials are below thresholds established by federal, state, and local regulations, thereby reducing the potential for construction personnel or the environment to be exposed to hazardous materials.

Figure 4.6-3. Feasibility Study Site Units in the Applicant's Leased Area and the Project Area for the On-Site Alternative

Construction activities associated with the On-Site Alternative would also encounter possible lead- and asbestos-containing materials, chemically treated wood, and polychlorinated biphenyls (PCBs) during demolition of existing structures. Releasing these materials into the air, soil, surface water, or groundwater would affect the health and safety of construction personnel and others. However, demolition of former Reynolds facility buildings and structures would require adherence to all applicable standards and regulations. The applicable agencies and regulations would provide oversight and prevention techniques. Therefore, lead- and asbestos-containing material, treated wood debris, and caulking waste (containing PCBs) would be managed properly and disposed of at off-site facilities to avoid and minimize potential impacts on human health and the environment.

Introduced Hazardous Materials

Construction of the terminal would involve the routine transport, use, storage, and disposal of hazardous materials such as fuels, solvents, paints, oils, concrete-curing compounds, and grease. Releasing these materials into the air, soil, surface water, or groundwater would pose risks to human health and the environment. Hazardous materials likely to be transported, used, stored, or disposed of in the project area during construction would be materials typical of construction projects and would generally be used and handled in relatively small quantities (less than 5 gallons). However, fuel spills could range from less than 50 gallons up to a worst-case maximum spill from a fuel truck of approximately 4,000 gallons.²

Impacts from releases would likely be localized and short-term in nature although spills could reach and affect the Columbia River. The Applicant would be required to transport, use, store, and dispose of hazardous materials in compliance with applicable federal, state, and local laws and regulations such as the RCRA, U.S. Department of Transportation Hazardous Materials Regulations, and other regulations identified in Section 4.6.1, *Regulatory Setting*. The enforcement of construction and demolition standards and best management practices by state and local agencies (e.g., Ecology, Longview Fire Department, Cowlitz County Public Works), would help minimize the potential for a release of hazardous materials.

Furthermore, the Applicant would be required to obtain and comply with the NPDES Construction Stormwater General Permit, which requires controls to protect surface water and groundwater. The permit would require the preparation of a construction stormwater pollution prevention plan and implementation of best management practices to avoid and minimize the risk of pollutants from entering surface waters and groundwater, thereby, further reducing the potential for impacts on the Columbia River.

Construction—Indirect Impacts

Construction-related activities would not result in indirect impacts. Construction of the proposed export terminal would not encounter or introduce hazardous materials in the Applicant's leased area outside the limits of disturbance for the project area. Construction activities would be confined to the project area, and remediation of contaminated areas in the Applicant's leased area would be performed per the final cleanup action plan. In addition, the transport of hazardous materials in the Applicant's leased area to and from the project area would comply with applicable federal, state and local regulations such as the RCRA, U.S. Department of Transportation Hazardous Materials

² The capacity for fuel trucks used during construction and operations is discussed in Section 4.7, *Energy*.

Regulations, and other regulations identified above under *Remediation History*, in Section 4.6.4.1, *On-Site Alternative*. Furthermore, construction of the terminal would not encounter hazardous materials that would pose risks to human health and the environment from any of the five hazardous materials sites identified in the indirect impacts study area (Section 4.6.4.3, *Hazardous Materials Sites in the Study Areas*) because soil contaminants associated with these site would not come into contact with construction activities, and groundwater contamination has either not been reported, or groundwater flows away from the project area.

Operations—Direct Impacts

Operations-related activities of the proposed export terminal are described in Chapter 3, *Alternatives*, but would take place on a site identified for remediation (the Applicant's leased area) and cleaned up as described in the final cleanup action plan. As a result, hazardous materials could be encountered in the project area that would pose risks to human health and the environment. In addition, the following hazardous materials are expected to be used during normal operations of the terminal at the On-Site Alternative location.

- Diesel fuel, gasoline, oils, greases, hydraulic fluids, antifreeze/coolants, and solvents used for equipment operation and maintenance.
- Sulfuric acid, calcium hydroxide, flocculants, lime, and antiscalants used for water treatment.
- Chemicals used in the on-site laboratory (generally in small quantities of 5 gallons or less) could include methylene chloride, toluene, acetone, and 2-butanone.
- Wastes classified as hazardous and sanitary sewer waste.

These materials would be stored on site, as well as all necessary collection and containment measures for immediate response to any spill; however, operation of the terminal could result in exposing or releasing these substances into the project area that would pose risks to human health and the environment. Impacts associated with encountering and introducing hazardous materials during operations are described below.

Encountering Hazardous Materials

Operation of the terminal at the On-Site Alternative location would not encounter hazardous materials in the project area that would pose risks to human health and the environment as remedial and monitoring activities associated with the former Reynolds facility would be carried out as described in the final cleanup action plan and would be coordinated to avoid contact and exposure to operations personnel and the environment.

Introduced Hazardous Materials

Operation of the terminal at the On-Site Alternative location would involve the use of hazardous materials and would generate small quantities of hazardous waste that could be released into the environment through an accidental spill, which would pose a risk to human health and the environment. However, hazardous materials would generally be stored and used in small quantities. In addition, the Applicant is responsible for reporting and responding to spills as required by federal, state, and local laws.

Locomotives (with fuel capacity of approximately 5,000 gallons) traveling to and from the project area could accidentally release fuel during operations; however, the likelihood of a

derailment or spill would be low. Locomotives and rail cars would be maintained, and failed equipment would be repaired in a timely manner by train or railroad operators, thereby minimizing the potential for releases. Further information on rail transportation and rail safety is provided in the Chapter 6, Section 6.1, *Rail Transportation*, and Section 6.2, *Rail Safety*, respectively.

As with construction, the Applicant would be required to transport, use, store, and dispose of hazardous materials in compliance with applicable federal, state and local laws and regulations such as the RCRA, U.S. Department of Transportation Hazardous Materials Regulations, and other regulations identified in Section 4.6.1, *Regulatory Setting*. The Applicant would follow regulations governing the storage of hazardous materials and the separation of hazardous materials in designated storage areas. Water quality and the Columbia River would be protected from polluted stormwater runoff as a result of the Applicant complying with the requirements of the NPDES Industrial Stormwater Permit.

Operations—Indirect Impacts

Operation of the terminal at the Off-Site Alternative location would not result in indirect impacts associated with encountering or introducing hazardous materials on the Applicant's leased area or the five hazardous material sites identified in the study area. However, the increase in rail traffic (240 unit trains arriving and 240 unit trains departing per month with three locomotives per train) on the Reynolds Lead and BNSF Spur could result in indirect impacts related to a release of hazardous materials that would pose risks to human health and the environment. However, locomotives and rail cars would be maintained, and leaks avoided by timely repairs made by train and railroad operators to minimize the potential for releases.

Fuel spills could occur if trains or rail cars collide or derail. Public safety and environmental risks of a fuel spill by collision or derailment would include fires or explosions, wildfires, water contamination, air quality impacts, impacts on tribal treaty resources, and impacts on wildlife, vegetation and fish. If a release of hazardous materials in the study area were to result from a collision or derailment, emergency response and cleanup measures would be implemented as required by the federal and state law, including Washington State regulations under RCW 90.56. Further information on rail transportation and rail safety is provided in the Chapter 6, Section 6.1, *Rail Transportation*, and Section 6.2, *Rail Safety*, respectively. Indirect impacts associated with increased vessel traffic are addressed in Chapter 5, Section 5.5, *Water Quality*, and Chapter 6, Section 6.4, *Vessel Transportation*.

4.6.5.2 Off-Site Alternative

Potential impacts related to hazardous materials from construction and operation of the proposed export terminal at the Off-Site Alternative location are described below.

Construction—Direct Impacts

Construction-related activities for the Off-Site Alternative would follow the same construction sequence and require the same materials and equipment as described for the On-Site Alternative. However, the Off-Site Alternative project area is undeveloped and no building demolition would be required. In addition, site preparation would require vegetation removal because the area is currently overgrown with vegetation. The Off-Site Alternative would also require constructing a new access road and rail spur. Therefore, construction of the proposed export terminal at the Off-

Site Alternative location could encounter hazardous materials in the project area that would pose risks to human health and the environment.

Although there are no documented or known sources of environmental contamination in the project area, past farming activities and operation of a former motocross track may have involved pesticides, herbicides, fuel, and other related petrochemical contaminants that could have affected soil, surface water, and groundwater. It is not known if any chemicals were released into soils, surface waters, or groundwater. The Applicant would need to screen, sample, and analyze soils to confirm if any contamination is present.

In addition, environmental contaminants from the closed Mount Solo Landfill could have migrated into groundwater in the project area. Construction workers could be exposed to contaminated groundwater during construction activities. The Applicant would need to characterize groundwater flow and quality beneath the site to determine if this is occurring.

Construction—Indirect Impacts

Construction of the proposed export terminal would not result in indirect impacts. Construction would not encounter contaminants from the closed BMP facility in the On-Site Alternative project area because chemicals of concern are contained by soil caps, and soil and groundwater monitoring show that fluoride has limited mobility under existing conditions and is not affecting down-gradient groundwater or surface water quality (Anchor QEA 2015). Furthermore, construction of the terminal is not expected to encounter hazardous materials originating from the four hazardous materials sites in the study area (Sites 1 through 4). Impacts would be the same as those discussed for the On-Site Alternative.

Operations—Direct Impacts

Operation of the proposed export terminal at the Off-Site Alternative location would require using and storing the same materials as identified for the On-Site Alternative, and would generate hazardous wastes in similar quantities. Operation of the terminal would result in the following direct impacts.

Encountering Hazardous Materials

As explained previously, it is not known if any chemicals were released into or remain in the soil, surface water and sediments, or groundwater in the Off-Site Alternative project area. The Applicant would need to screen, sample, and analyze soils to confirm whether any contamination is present. If found, contaminants would need to be remediated prior to initiating operation. Therefore, operations are not expected to encounter preexisting hazardous materials that would pose risks to human health and the environment.

Similarly, it is not known if environmental contaminants from the closed Mount Solo Landfill have migrated into groundwater in the project area and would affect operations. The Applicant would need to characterize groundwater flow and quality beneath the project area prior to issuance of grading permits to determine whether groundwater is contaminated and evaluate the potential for impacts.

Introduced Hazardous Materials

Operation of the terminal at the Off-Site Alternative location would involve the same types and quantities of hazardous materials as the On-Site Alternative, and operations would be limited to the project area. The terminal would operate in compliance with all applicable environmental laws and regulations and implement similar water management and treatment facilities as proposed for the On-Site Alternative. Therefore, impacts would be the same as those discussed for the On-Site Alternative.

Operations—Indirect Impacts

Operation of the proposed export terminal at the Off-Site Alternative location would result in indirect impacts similar to a terminal constructed at the On-Site Alternative location. In addition, the terminal at the Off-Site Alternative location would require approximately 2,500 linear feet of new rail spur, which could increase the potential to release hazardous materials during rail operations. It is unknown whether that increased potential would be measurably different from the On-Site Alternative.

4.6.5.3 No-Action Alternative

Under the No-Action Alternative the Corps would not issue a Department of the Army permit authorizing construction and operation of the proposed export terminal. As a result, impacts resulting from constructing and operating the terminal would not occur. In addition, not constructing the terminal would likely lead to expansion of the adjacent bulk product business onto the export terminal project area. The following discussion assesses the likely consequences of the No-Action Alternative related to hazardous materials.

Because operations of the former Reynolds facility have resulted in cleanup actions throughout the Applicant's leased area, new development or expansion of existing uses could encounter similar impacts during construction and operation as those discussed for the On-Site Alternative. Construction activities could take place in RI/FS cleanup and focus areas, as well as involve handling possible lead- and asbestos-containing materials, chemically treated wood, and PCBs that would pose risks to human health and the environment. In addition, construction activities would involve the routine transport, use, storage, and disposal of hazardous materials such as fuels, solvents, paints, oils, concrete-curing compounds, and grease. Operations would also be expected to use similar hazardous materials as those described for the On-Site Alternative. However, all potential impacts would be minimized through remedial actions carried out in the cleanup action plan and compliance with federal, state, and local regulations as well as implementation of best management practices. Therefore, impacts of the No-Action Alternative related to hazardous materials are expected to be similar to the On-Site Alternative.

4.6.6 Required Permits

The following permits related to hazardous materials would be required for the proposed export terminal.

- **National Pollutant Discharge Elimination System Construction Stormwater General Permit—Washington State Department of Ecology.** The quality of surface water and groundwater would be protected by the Applicant obtaining and complying with an NPDES Construction Stormwater General Permit. The permit would require preparation of a

construction stormwater pollution prevention plan and implementation of best management practices to minimize the risk of pollutants entering surface waters and groundwater.

As part of the NPDES Construction Stormwater General Permit, a stormwater pollution prevention plan would be required. A stormwater pollution prevention plan is a site-specific document that identifies potential sources of stormwater pollution at the construction site; describes practices to reduce pollutants in stormwater discharges from the construction site; and identifies procedures to comply with the terms and conditions of the permit.

- **National Pollutant Discharge Elimination System Industrial Stormwater Permit—Washington State Department of Ecology.** The quality of surface water and groundwater would be protected as a result of the Applicant obtaining and following an NPDES Industrial Stormwater Permit. The permit would require preparation of a stormwater pollution prevention plan and implementation of best management practices to minimize the risk of pollutants entering surface waters and groundwater.

As part of the NPDES Industrial Stormwater Permit, a stormwater pollution prevention plan would be required. A stormwater pollution prevention plan is a site-specific document that identifies potential sources of stormwater pollution from operations; describes practices to reduce pollutants in stormwater discharges; and identifies procedures the operator would implement to comply with the terms and conditions of the permit.

- **Clean Water Act, Section 401 Water Quality Certification—Washington State Department of Ecology.** The On-Site Alternative would involve construction and operation of a facility that requires state water quality certification under Section 401 of the Clean Water Act. Water quality certification would require implementation of best management practices to protect the aquatic environment.

4.7 Energy

The availability and conservation of energy are important factors to consider for large projects, such as the proposed export terminal. This section describes energy resources in the study area. It then describes impacts on energy from construction and operation of the terminal.

4.7.1 Regulatory Setting

No federal, state, or local laws or regulations pertaining to the use of energy apply to the proposed export terminal.

4.7.2 Study Area

The study area for direct impacts on energy for both the On-Site Alternative and the Off-Site Alternative is the project area. For indirect impacts, the study area is the project area plus the surrounding area within 0.25 mile of the project area. When assessing the availability of energy, the analysis considers those resources that are available regionally. The Corps' *NEPA Scope of Analysis Memorandum for Record* (MFR) (2014) did not identify a specific study area for energy.

These study areas are based on the Corps' NEPA Scope of Analysis Memorandum for Record (MFR) (February 14, 2014) then adjusted to reflect groundwater characteristics in and near the project areas.

4.7.3 Methods

The following sources of information were used to identify potential impacts of the proposed export terminal on energy in the study area.

- Cascade Natural Gas website (<http://www.cngc.com/utility-navigation/about-us>)
- *City of Longview Comprehensive Plan* (City of Longview 2006)
- *Cowlitz Conservation District 5-Year Plan* (2007 to 2012) (Cowlitz Conservation District 2007)
- *Cowlitz County Comprehensive Plan* (Cowlitz County 2014)
- *Cowlitz Public Utility District Annual Reports* (Cowlitz Public Utility District 2008–2014)
- *Washington Energy Consumption Estimates, 2013* (U.S. Energy Information Administration 2013)
- U.S. Mining Cowlitz County's Mines website (<http://www.us-mining.com/washington/cowlitz-county>)
- Applicant-provided data

Potential impacts on energy were evaluated based on the estimated energy consumed during construction and operation of the terminal and the change in fuel consumption in the study area. Estimated hours of operation and types of fuel consumed were used to quantify energy consumption. Pre- and post-construction energy usage were estimated using data provided by the Applicant.

4.7.4 Affected Environment

This section describes the existing energy sources and their ability to serve the proposed export terminal in either location. These energy sources would be needed in the short term to construct the terminal, and in the long term to operate the terminal.

4.7.4.1 On-Site Alternative

Local Energy Sources

The project area is served by a number of local energy sources and providers, including electricity, natural gas, and diesel fuel facilities.

Electricity

Electricity is provided to the project area by Cowlitz Public Utility District (PUD), which supplies electricity throughout Cowlitz County. Cowlitz PUD buys over 90% of its wholesale power from Bonneville Power Administration (BPA). The majority of the BPA power comes from the Columbia River system hydroelectric projects.

Cowlitz PUD provides service throughout Cowlitz County and is among the largest public utility districts in Washington State. Cowlitz PUD estimates that customers will use 609 average megawatts and 821 peak megawatts of electricity in 2015 (Cowlitz Public Utility District 2015). Approximately 14% of Cowlitz PUD's power is sold to residential users, and approximately 8% to small industrial users (22 companies or industries). Major industrial users consume approximately 71% of the remaining power. Small general service and street/area lighting account for the other electrical usage (Cowlitz Public Utility District 2015).

Natural Gas

Natural gas is provided to the project area by Cascade Natural Gas, which supplies residential, commercial, and industrial users throughout Cowlitz County and beyond. The Cascade Natural Gas service area is concentrated in western and central Washington, and central and eastern Oregon. Interstate pipelines transmit the company's natural gas from production areas in the Rocky Mountains and western Canada (Cascade Natural Gas Company 2014).

Diesel Fuel

Local suppliers provide diesel fuel in the Longview-Kelso area. In Washington State, approximately 88.36 million gallons of diesel fuel were sold annually to railroad-related uses in 2012 (U.S. Energy Information Administration 2014). This represents approximately 9% of total diesel sales for all uses in the state. The largest consumers were on-highway users, or motor vehicles, accounting for 62% of diesel sales, or approximately 618 million gallons, in Washington State in 2012.

Diesel fuel sales for vessel uses in Washington State (excluding the military) totaled 80.5 million gallons in 2012, which accounted for 8.2% of the total diesel sales in the state (U.S. Energy Information Administration 2014). In 2013, the total prime supplier sales volume of fuel oil was 469.86 million gallons for Washington State (U.S. Energy Information Administration 2014).

Project Area Energy Usage

Cowlitz PUD provides electricity to the On-Site Alternative project area via overhead 230-kilovolt and 115-kilovolt power lines along Industrial Way. Other power lines run perpendicular to the north end of the project area, where they converge with a BPA substation. The existing power configuration is sufficient for the current operations at the project area (URS Corporation 2014). The existing annual electricity use for the existing bulk product terminal (outside the project area but within the Applicant's leased area) averages 20 megawatts based on the average electrical usages for 2014.

Within the project area, administrative buildings use electricity provided by Cowlitz PUD. Other energy consumed comes from diesel- or gasoline-powered generators provided by local fuel suppliers.

4.7.4.2 Off-Site Alternative

The local energy sources are the same as described for the On-Site Alternative.

The Off-Site Alternative is located on Barlow Point, which is undeveloped; therefore, energy is currently not provided to the project area. Construction and operation of the proposed export terminal at the Off-Site Alternative location would require energy from Cowlitz PUD and Cascade Natural Gas. The project area does not have solar or wind energy infrastructure to create solar or wind energy.

Similar to the On-Site Alternative, Cowlitz PUD provides electricity in the area. Overhead power lines and an associated easement run overhead diagonally at the southeast end of the project area, south to north, and then converge with other power lines north of State Route 432 parallel to the project area. The nearest BPA substation, Mint Farm substation, is east of the project area at State Route 432 and 38th Avenue.

4.7.5 Impacts

This section describes the potential direct and indirect impacts related to energy from construction and operation of the proposed export terminal.

4.7.5.1 On-Site Alternative

Construction—Direct Impacts

Construction-related activities would include demolishing existing structures and preparing the site, constructing the rail loop and dock, and constructing supporting infrastructure (i.e., conveyors and transfer towers). Heavy machinery would be operated to prepare foundations and footings for construction of the proposed export terminal, associated services, and utilities. Diesel fuel and gasoline would be used in most construction equipment such as cranes, wheel loaders, dozers, dump trucks, excavators, graders, rollers, compactors, drill rigs, pile-driving equipment, portable ready-mix batch plant, ready-mix trucks, concrete pumps, elevated work platforms, forklifts, rail-track-laying equipment, water pumps, and other similar machinery (URS Corporation 2014a). A fuel truck would visit the construction site as required. The frequency during construction would vary based on usage and activities and could range from once or twice per day to once or twice per week. Fuel trucks used during construction would have a 3,000- to 4,000-gallon capacity. A temporary increase

in fuel use would result from the need to transport employees and materials to the project area and to operate construction equipment.

Construction of the proposed export terminal at the Off-Site Alternative location would result in the following direct impact.

Increased Energy Use

Construction-related energy uses would include the use of electricity, diesel fuel, gasoline, oil, and natural gas. Construction would require on average each month approximately 500 gallons of gasoline, 50 gallons of oil, and 20,000 gallons of diesel fuel.

Electricity from Cowlitz County PUD would be consumed to provide construction lighting and power tools and equipment. Natural gas would be used for minor purposes, including to heat water for showers and other sanitary uses, but not for industrial uses. Heavy machinery would operate during construction, which would increase fuel use. The demand for gasoline, oil, diesel fuel, and natural gas during construction would be minor compared to the current regional demand for these fuels and could be met by the existing local and regional supply.

Construction—Indirect Impacts

Construction of the proposed export terminal at the On-Site Alternative location would result in the following indirect impact.

Increased Energy Use

A temporary increase in fuel consumption would result from the transport of employees and materials to the project area during construction. This fuel consumption would be minor compared to the current demand for these fuels in the study area, and could be met by the existing local and regional supply.

Operations—Direct Impacts

Operation of the proposed export terminal at the On-Site Alternative location would result in the following direct impact.

Increased Energy Use

Electricity, gasoline, oil, propane, and diesel fuel would be the primary energy types consumed during operations of the terminal. Electricity would be used to heat buildings and light indoor and outdoor areas, to power the automated system used to unload coal from trains, store coal, reclaim the coal from storage, and load the vessels. Specific types of equipment used for these processes include rail car unloading facilities, stacking conveyers, bucket wheel reclaimers, the belt conveyor system, and shiploaders.

Operational electricity usage is estimated at approximately 6,624,000 kilowatts per hour, per year, and operational electricity requirements are estimated at 20 to 25 megawatts per year. At full operation, the terminal's energy use would represent an average of approximately 4% of the total electricity supplied to users in the Cowlitz PUD service area. This electricity demand is anticipated to be met by existing regional supply because Cowlitz PUD currently has the capacity to meet the electricity demand.

Gasoline, propane, and diesel would be used to power vehicles and equipment used for standard operations and routine maintenance. Operations is anticipated to require each month on average approximately 100 gallons of gasoline, 75 gallons of oil, and 865 gallons of diesel.

The demand for energy during operations would be minor compared to the current regional demand for these fuels and could be met by the existing local and regional supply.

Operations—Indirect Impacts

Operation of the proposed export terminal at the On-Site Alternative location would result in the following indirect impact.

Increased Fuel Consumption

The terminal would increase fuel consumption by the following.

- Approximately 240 unit trains arriving and 240 unit trains departing each month, which would increase rail locomotive fuel consumption in the study area.
- Approximately 140 vessel transits each month, which would increase vessel fuel consumption in the study area.
- Approximately 135 employees to operate the facility, which would generate approximately 270 trips per day assuming two employee trips per day. These vehicle traffic operations would increase vehicle fuel consumption in the study area.
- A fuel truck with a 3,000- to 4,000-gallon capacity would come to the project area as needed to supply vehicles and equipment with fuel for operations and maintenance. The frequency would vary based on usage and activities. This activity would increase fuel consumption in the study area.

Trains and vessels would not be fueled at the terminal. Fuel consumption from employee and fuel truck trips would be minor compared to the current demand for fuel within the study area, and could be met by the existing local and regional suppliers.

4.7.5.2 Off-Site Alternative

Construction—Direct Impacts

Construction of the proposed export terminal at the Off-Site Alternative location would result in the following direct impact.

Increase Energy Use

Because the project area for the Off-Site Alternative is undeveloped, energy resources are not currently provided to the project area. The Off-Site Alternative would likely require a level of preloading similar to the On-Site Alternative. The primary differences between constructing the terminal at the Off-Site Alternative location versus the On-Site Alternative location would be the need to construct an access road to the project area, install a rail line extension, and conduct additional dredging to accommodate the new docks (Docks A and B).

Impacts related to the use of electricity, diesel fuel, gasoline, oil, and natural gas during construction of the terminal at the Off-Site Alternative location would be similar to construction-

related impacts for the On-Site Alternative. The terminal at the Off-Site Alternative location could be powered via power lines from the Mint Farm substation located 0.5 mile east on State Route 432. Any disruptions in surrounding service associated with construction of the terminal would be temporary.

Construction—Indirect Impacts

Construction of the proposed export terminal at the Off-Site Alternative location would have the same indirect impact as the On-Site Alternative.

Operations—Direct Impacts

Operation of the proposed export terminal at the Off-Site Alternative location would result in the following direct impact.

Increased Energy Use

Electricity, gasoline, propane, oil, and diesel fuel would be the primary energy types consumed on site. Impacts related to the use of these energy sources during operation of the terminal at the Off-Site Alternative location would be similar to operations-related impacts for the On-Site Alternative. Coordination with the Cowlitz PUD for new electricity demand would be required to supply electricity and natural gas. The project area would likely be served via power lines from the Mint Farm substation located 0.5 mile east on State Route 432 (URS Corporation 2014b).

Operations—Indirect Impacts

Operation of the proposed export terminal at the Off-Site Alternative location would have the same indirect impact as the On-Site Alternative.

4.7.5.3 No-Action Alternative

Under the No-Action Alternative, the Corps would not issue a Department of the Army permit authorizing construction and operation of the proposed export terminal. As a result, impacts resulting from constructing and operating the export terminal would not occur. In addition, not constructing the export terminal would likely lead to expansion of the adjacent bulk product business onto the export terminal project area. Any expansion of the existing bulk terminal would increase the demand for energy (natural gas, electricity, diesel fuel, and gasoline). Cowlitz PUD and Cascade Natural Gas have the capacity to meet the anticipated demand and local suppliers would be able to accommodate diesel and gasoline demand.

4.7.6 Required Permits

The proposed export terminal would require building and site development permits from the Cowlitz County Department of Building and Planning in relation to the use of energy (such as electrical and mechanical permits).